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TAGMEMIC AND MATRIX LINGUISTICS APPLIED TO SELECTED AFRICAN LANGUAGES. FINAL REPORT.

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THE APPLICATION OF TAGMEMIC AND MATRIX TECHNIQUES TO SOME PROBLEMS IN AFRICAN DESCRIPTIVE LINGUISTICS, AND THE ILLUSTRATION OF THIS APPLICATION WITH DATA SOURCES (RESTATED IN TAGMEMIC TERMS) WERE PRESENTED. (TAGMEMIC AND MATRIX TECHNIQUES REFER, RESPECTIVELY, TO THE STUDY OF (1) ONE-WORD OR MULTIWORD GRAMMAR UNITS AND THE FUNCTIONS OF THESE UNITS WITHIN SENTENCE CONSTRUCTION AND (2) LANGUAGE ELEMENTS WITHIN SENTENCE STRUCTURES BY USING TABULAR RELATIONSHIPS.) PROJECT STUDIES CENTERED ON 18 NIGER-CONGO WEST AFRICAN LANGUAGES, COVERING THE SUBJECTS OF CLAUSES, CLAUSE CLUSTERS IN SENTENCES, SENTENCE CLUSTERS IN PARAGRAPHS (NARRATIVE AND DISCOURSE), NOUNS AND NOUN PHRASES, VERBS, PHONOLOGY, AND PEDAGOGICAL PLANNING. PAPERS WERE INCLUDED IN THE REPORT ON THE MBEMBE CLAUSE SYSTEM, SERIAL CONSTRUCTIONS IN KASEM, INDEPENDENT CLAUSES OF DEGEMA, GRAMMATICAL PROSODIES, NOMINAL AND VERBAL GROUP MATRICES FOR KASEM, NOUNS OF ETUNG, VERB STRUCTURES IN ETUNG, PARALINGUISTICS IN MBEMBE, AND PHONOLOGICAL DATA OF AGBO. (GC)

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Tagmemic and Matrix Linguistics Applied to Selected African Languages

November 1966

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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TAGMEMIC AND MATRIX LINGUISTICS APPLIED TO SELECTED AFRICAN LANGUAGES

Final Report

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Kenneth L. Pike

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The University of Michigan
Center for Research on Language
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Ann Arbor, Michigan

TABLE OF CONTENTS

Page

INTRODUCTION.. 1

CHAPTER

I: CLAUSES.. 12

1.1. Clause Typology.. 12

1.1.1. Basic (Kernel, Nuclear) Clause Types.................. 12

1.1.2. Derived (Marginal) Clause Types....................... 18

1.2. Clause Contrasts... 26

1.3. Clause Variants.. 31

1.3.1. Variation by Presence of Nuclear Tagmemes............. 32

1.3.2. Variation by Optional and Marginal Tagmemes........... 32

1.3.3. Variation by Order of Tagmemes........................ 33

1.3.4. Variation by Simple Substitution...................... 34

1.3.5. Variation by Substitution of Manifesting Constructions.. 34

1.3.6. Variation by Agreement (Concord)...................... 35

1.3.7. Variation by Occurrence in Clause Clusters............ 36

1.4. Clause Distribution...................................... 38

1.5. Some Clause Components of Bobangi (Bantu)................ 38

1.6. Some Clause Components of Hausa (Chad, Afroasiatic)..... 47

II: CLAUSE CLUSTERS IN SENTENCES.............................. 55

2.1. The Sentence as Setting for Clause Distribution......... 55

2.2. Clause Clusters (Serial Clauses)......................... 57

2.2.1. General Restrictions on Sequence Types in Clusters...... 57

2.2.2. Specific Restrictions on Sequence Types in Clusters..... 60

2.2.3 Restrictions on Tagmemes within Clause Clusters......... 62

TABLE OF CONTENTS (continued)

CHAPTER Page

2.2.4. Agreement Restrictions within Clause Clusters.......... 65

2.2.5. Development of Clause Subclusters..................... 66

2.2.6. Development of Auxiliary Verbs from Clause Clusters.... 71

III: BEYOND THE SENTENCE.. 79

3.1. Sentence Clusters in Paragraphs.......................... 79

3.2. Discourse Structure...................................... 84

3.2.1. Narrative.. 84

3.2.2. Indirect versus Direct Discourse....................... 86

IV: NOUNS AND NOUN PHRASES....................................... 93

4.1. Types of Noun Phrases.................................... 93

4.2. Development of Compound Nouns............................ 99

4.3. Syntactic Markers Developed from Nouns................... 104

4.4. Irregularities within Noun Classes as Distortion of Field.. 106

4.5. Noun Concord... 108

4.5.1. Ranking in Singular-Plural Prefix Pairs................ 109

V: VERBS.. 114

5.1. Vowel Fusion in Matrix Display........................... 114

5.2. Tone Pattern in Verbs.................................... 116

5.3. Hausa (Afroasiatic) Formatives in Person-Aspect Markers.. 120

VI: PHONOLOGY... 125

6.1. Quasi-Isochronic Units of an Accentual Hierarchy......... 125

6.2. Tone... 132

6.2.1. Basic Tone Heights..................................... 132

TABLE OF CONTENTS (continued)

CHAPTER Page

6.2.2. Extra-High Tone Developed from Lost High................ 133

6.2.3. Lowered Key (Terrace) Developed from Lost Low........... 135

6.2.4. Terrace Tone Developed from Low-Replaced-by-High........ 136

6.2.5. Indications of a Developing Downstep in a Three-Level System.. 137

6.2.6. Overlap of Conditioned Allotones........................ 139

6.2.7. Towards Internal Reconstruction of Tone Chains.......... 141

6.2.8. Theory of Phoneme Types as Item, Process, and Relation... 144

6.3. Segmental Phonemes..................................... 145

6.3.1. On the Phonetics of Vowel Harmony...................... 145

6.3.2. General Phonetics....................................... 145

6.3.3. On Data Collection Preparatory to Workshop Analysis..... 146

6.4. Intersection of Voice Quality with Gesture.............. 147

VII: IMPLICATIONS OF MATRIX APPROACH IN PEDAGOGICAL PLANNING.......... 150

VIII: SUMMARY.. 154

APPENDICES

I: Notes on the Mbembe Clause System - A preliminary analysis, Kathleen Barnwell.. 156

II: Preliminary Notes on Serial Constructions in Kasem, Kathleen Callow.. 182

III: Preliminary Paradigm of Some Degema Independent Clauses, Elaine Thomas.. 187

IV: Grammatical Prosodies ??, John T. Bendor-Samuel................. 192

V: Nominal and Verbal Group Matrices for Kasem, J. C. Callow........ 197

VI: Nouns of Etung Classified by Their Singular-Plural Prefix Pairs, Eileen Edmondson.. 206

TABLE OF CONTENTS (continued)

APPENDICES

Page

VII: Preliminary Description of Some Verb Structures in Etung, Tom Edmondson.......... 227

VIII: Preliminary Report on Para-Linguistics in Mbembe (E. Nigeria), P. M. Revill.......... 245

IX: An Interim Workshop Report on the Phonological Data of Agbo, Klaus and Janice Spreda.......... 255

X: Some Articles in Preparation.......... 289

INTRODUCTION

Goal: The purpose of this study is (1) to discuss the application of tagmemic and matrix techniques to some problems in African descriptive linguistics, and (2) to illustrate this application (a) with data from published sources, restated in tagmemic terms, and (b) with hitherto unpublished data, gathered principally by members of the Summer Institute of Linguistics.

By a tagmeme we mean a unit of grammar, such as the predicate or the object of a sentence; the tagmeme is viewed as having (a) function in a construction--"object," for example--and (b) a set of forms--e.g., The boy, John, somebody-- which can come in the appropriate slot. By a linguistic matrix we mean a table of language elements; rows and columns represent significant properties of a structural system or subsystem; entries in the boxes of the table signal properties of the system; and--preferably--the rows and columns are ordered so as to show in the most effective way possible the relation of the semantic properties of the system to groups of entries in the table.

It is assumed that most readers of this report will have had initial exposure to the tagmeme concept through--say--the introductory pedagogical treatment of Benjamin Elson and Velma Pickett[1]; and the matrix concept seen in one of the available articles.[2] A tagmemic bibliography, complete up through 1964 but already outdated, is also available.[3] An attempt to bring tagmemics into relation with some other theories (as of 1964, but also now incomplete because of rapid developments within other theoretical approaches) is found in bibliographical sections of my larger work[4] on tagmemics.

From the first (1954) volume of this latter study, there was an attempt to locate and specify certain characteristics which were universal to all the languages of man--and to the structure of his nonverbal behavior as well. It was urged that all purposive human activity and perception were constrained by in-born elements of the human mechanism. Different languages--or sets of nonverbal behavior patterns--might be learned from one's cultural surroundings, but each such set was in turn restricted by the nature of man himself. I sought there to exploit samples of observed characteristics of language behavior to deduce limits on the total kinds of possible language features. Extrapolation from these samples aimed at a systematic, "etic" summary and presentation of this kind of language potential.

The kinds of universal characteristics postulated included the presence of units in all languages. It was affirmed that units, to be presented adequately, must be described in reference to contrasts between them, variability within them, and distribution of small units within larger units and within classes and systems of units.

Inclusion within successively larger units was possible, in turn, only within a theory such as tagmemics which gave due weight to hierarchical ordering of units. Since, however, the borders of unit types did not always coincide, a multiple-hierarchical approach (lexicon, phonology, grammar) had to be postulated (with analogues in nonverbal areas)--and these features, also, were set up as universals. Relation between these hierarchies, in turn, involved fusion between units of one hierarchy (e.g., lexicon) in part induced by their inclusion in--and modification by--another (e. g., the high-level phonological units such as stress groups).

The emphasis of the approach was heavily heuristic: The scheme of concepts, etic typologies, and unit descriptions, was utilized first of all as a basis for the search for pattern in language. The discovery of structure within numerous languages was greatly facilitated thereby.

Later (say 1959 to 1965) the portrayal of certain kinds of pattern was aided by the development of tabular displays (matrices) in which contrastive features of a syntactic system served as the dimensions of the system (much as articulatory features serve as the dimensions of a phonetic chart). Through the relationship between such matrices, the relationship between sentences could be more easily discussed.

Pattern seen through matrix, furthermore, entered the conceptual framework of field, in this over-view of language. Particle, wave, and field provided diverse perspectives for emphases on static, dynamic, and functional characteristics of units-in-system.

Units were seen first of all as particles segmented out of the stream of speech. When, however, the units were viewed as having indeterminate nonsegmentable boundaries in a dynamic flowing hierarchy of nuclear and marginal elements, a wave perspective was more appropriate. As points in an intersecting set of contrastive categories, units such as clauses were seen in field perspective.

The extension of the matrix approach to morphological data led to the development of technological procedures for grouping together bits of material which, in a classical approach, would be seen as highly irregular. In a matrix approach some of these appeared to have other kinds of regularity. The field approach probed beneath the morphemic layer of structure--threatening the classical view of the morpheme, but re-establishing the morpheme as a special instance of a field formative. (A simple morpheme, in this view, is a vector formative, a phonological segment coming in each cell of one vector--one row or one column--of a matrix, and therefore in a one-to-one relation of phonological shape to matrix category). Irregular morphemic systems were thereby seen in a different perspective. Irregularity, from one viewpoint, might sometimes represent regularity from another.

Meanwhile, the development of transformational grammar had had a heavy impact on linguistic studies. Tagmemic investigations had not been immune. It seems highly probable that the implicit transformational question[5] "How are sentences related?" as further developed by Noam Chomsky[6] may have hastened the development of such approaches as that of matrix multiplication. Earlier yet, the work[7] of Lounsbury and Goodenough on kinship systems was an encouragement to develop clause matrices. I am happy to acknowledge these influences. Already many tagmemic descriptions are using a transformational component, encouraging us to hope, as I stated in 1960,[8] that the two approaches should some day 'come to a point of complete overlap.'

The generative approach to grammatical description, as worked out by Chomsky and his associates, is also beginning to have its impact on tagmemic discussion. Longacre, for example, has given us a first attempt[9] at making explicit the generative power of tagmemic formulas. On the whole, nevertheless, tagmemics has itself had a much greater contribution to the making explicit of heuristic procedures than to the deductive generative ones. This is not surprising, in view of the many unwritten languages being studied[10] by people trained in tagmemic theory and practice. In such circumstances, the search for pattern must precede any descriptive or generative grammar.

Tagmemic interests, furthermore, have continued to broaden. From a simple discussion--or listing--of types of discourse in 1954, study has now widened[11] to include the nature of paragraphs, and the study of principles of rhetoric itself--or the discussion of poetry. From the early treatment of nonverbal behavior have grown extensive studies of social community.[12] Pedagogical principles[13] have also been illuminated.

Even so, however, a severe limitation lay on the theory: Its basis was a biased sample, with its inductive sources chosen largely from languages of North America, South America, New Guinea, and the Philippines. The postulated language--or human--universals needed to be tested in Africa and in the Orient before the empirical sample was large enough to allow us to rest assured of adequate coverage. What, specifically, might a study of African languages reveal which would either confirm the usefulness--and truth--of the tagmemic view of human nature and human languages or force its rejection, revision, or amplification?

Data of the real world are notoriously more varied than the unaided imagination of man. The philosopher at his desk has never been able to concoct a world as rich as that outside his window. Such a large block of the world as Africa, therefore, could likely be concealing some surprises. These surprises might be of several general kinds. One is the addition of new kinds of data never seen before. Another brings forth data which are "new" in a subtler sense: It consists of the discovery of an exaggerated form of a known problem--a problem which previously was known only in a form so simple that it did not warrant the development of an elaborate apparatus to handle it--or so simple that it was not complex enough to allow the researcher to predict the kind of formula needed for which this known problem was but a special instance. A third type of surprise is one for which there is less excuse, but which meets us all: the forcing to attention of data already described by other researchers, but in a language in which he has had but little interest, so that the special solutions already achieved have not had their deserved impact on him.

All of these were found in the African project being reported here. An early search of the literature, with the help of graduate students who attempted to restate in tagmemic terms data from various parts of Africa, guaranteed broader coverage than could otherwise have been achieved. The written sources included reference to West, East, and South Africa. Study of live data was confined to West Africa--to Ghana, Nigeria, and Dahomey.

Of kinds of material new to me, perhaps the most interesting was on discourse structure. The intricate "ranking" matrices--or the ordered rules--required to describe Bariba use of direct versus indirect quotations were elegant in beauty and totally unexpected. It was almost as if stage directions for spotlighting characters were translated into language rules.

Equally surprising and elegant--though with less obvious semantic implications--were the elaborate matrix relations required to give insight into the subtle traces of broken down concord in Abua verbs. When an independent object occurred in the clause, verb prefixes sometimes underwent a set of changes which could be understood best as the fusion of forms of an old lost concord matrix.

A further surprise came with the concord elements in Etung noun classes. Here there were patterned constraints in the relation of singular to plural forms, determined by a ranking of reconstructed front versus back elements (such that singular form x could be paralleled by plural y, z, or w; singular y by plural z or w; singular z by plural w, etc.). These two results were especially gratifying, in that the study of concord was one of the particular aims of the project, since prior work on morphological forms had implied that complexity of this type might be illuminated by this approach. Matrix approaches, therefore, were justified not only for the micro-analysis of concord relations--as we had hoped--but also for macro-analysis in discourse structure. Further support to micro-analysis came from work in Bimoba verbs (where scattered remnants of regularity could be abstracted from massive irregularity), and in Kasem noun forms. Support for discourse analysis in tagmemic terms came additionally from Sisala (with time words marking early places in discourse) and from Vagala (with sequences of sentences, the first of them marked for focus, comprising emic paragraphs).

A kind of structure which I had previously observed (in some variety) in New Guinea, but for which I then had no useful solution,[14] was a major, accentuated problem in West Africa: Clauses occurred in a series, or cluster, such that several could share the subject of the first (omitted from the remaining clauses of the series), the object of the first (or each have its own object), and some other tagmeme or tagmemes (e.g., location). This kind of grouping led to several consequences: (1) the whole series formed one entity, as in Kasem, distributed in a sentence slot; (2) certain standard types of sequences could, by various historical stages, decay into lower-level verb phrases (with one of the original free verbs becoming a verbal auxiliary or particle), as in Vagala; or, on the contrary, (3) the original series could remain a subcluster, but become tagmemically specialized (filling a slot in a larger including cluster), building up higher-level structures.

Probably tone structures, on the other hand, best illustrate the kind of problem which had been described by other scholars, but not adequately worked into my own thinking. In the middle of this century, William Welmers[15] called attention to "terrace tones." (This is a phenomenon where a tone which normally is high after another high is sometimes lowered a bit after a high--but continues to have following it, at whatever level it then happens to be, other high tones of the same system. Both the original high and the stepped-down high contrast with a low in that position after high. The step-down is occasioned, historically, by the loss of a low tone, between the two original highs, which lowered the second of the two by--then--non-phonemic conditioned variation.) I have enjoyed experimenting with treating the "downsteppingness" as a "process" phoneme--rather than as a segmental one.

The extensive morphophonemic changes, furthermore, require a special handling of the relation of tone patterns to words as wholes[16] rather than to stems or affixes as more-or-less discrete parts. Work on Etung and Bimoba highlighted this problem at the interface between lexicon, grammar, and phonology.

In phonetics proper, the most interesting item was the study of vowel quality underlying the vowel harmony of Twi, a study undertaken with Dr. John M. Stewart,[17] (who emphasized the linguistic reasons for needing a--Firthian--prosody for the "close" subset) and Dr. Ruth M. Brend of the University of Michigan and Michigan State University (who with Charles Peck of the University of Michigan provided the instrumental analysis). Instead of treating /i/ and /I/ as differing by either tense and lax, or close and open features, it appears best to treat the "open" set as basic, with the other set modified by having the root of the tongue thrust forward.

Various other analytical problems (e. g., of negative as a clause type; or of paralinguistics and its relation to gesture in Mbembe) and pedagogical ones (e.g., the techniques of planning a course of study, before the analysis was complete, so one could simultaneously carry on further research, and learn the language) added to the complexities of the project as a whole.

Before reaching Africa I was able to consult with various scholars who very kindly suggested areas of concern, warranting investigation, and gave me valuable bibliographical references. Among these scholars were Professor Jack Berry, Northwestern University; Professors H. A. Gleason and W. Samarin, Hartford Seminary Foundation; Earl W. Stevick, Foreign Service Institute; Prof. A. E. Meussen, Musee Royal de L'Afrique Centrale, Tervuren, Belgium; Dra. Bertha Siertsema, Free University of Amsterdam. From some old (1954) lecture tapes of Professor William Welmers, Univ. of California at Los Angeles, I had access to data previously made available to members of the Summer Institute of Linguistics. Before reaching Africa, also, I had available some preliminary tagmemic restatements of work by other scholars, made by graduate students Krohn (Shona), Sherman (Grebo), Rensch (Bobangi), Kappler (Hausa), Nicklas (Tswana).

The time in Africa was divided into two parts. In Ghana, various members of the Summer Institute of Linguistics gathered at Accra with their informants from November, 1965, through the middle of January, 1966.
The personnel, and the languages involved were:

John and Kathleen Callow, Kasem
Jack Kennedy, Dagaari
Gill Jacobs, Bimoba
Monica Cox, Basare
Marjorie Crouch, Vagala
Ron and Muriel Rowland, Sisala

From the middle of January until the end of March a second workshop was held at the University of Nigeria, Nsukka.

Members of the Summer Institute of Linguistics, with the languages studied at the workshop were:

Ian and Amelia Gardner, Abua
Paul and Inge Meier, Izi (and Dr. John Bendor-Samuel, Consultant)
Katherine Barnwell, and Patricia Revill, Mbembe
Richard and Nancy Bergman, Igede
Klaus and Janice Spreda, Agbo (and Dr. John Bendor-Samuel, Consultant)
Thomas and Eileen Edmondson, Etung
Elaine Thomas, Degema and Engenni

Member of the Sudan Interior Mission, Miss Jean Soutar, Bariba

Members of the Assemblies of God Mission:

Irene Crane and Ruby Peterson, Bette.

Member of the Evangelical Lutheran Mission (not official members of the workshop, but making data available to us):

Herbert Stahlke, Yachi

In each instance, I first ran through the available published and unpublished data of members of the workshop, watching for clues to material which might lend itself to the testing of tagmemic and matrix approaches. Some of the analyses were already arranged in such a way as to allow immediate partial transfer to the desired framework. Other material was obviously accessible to the members of the workshop (each of whom spoke the language concerned) through their informants.

Data, as already available, or as gathered for this purpose, were presented to the whole group, discussed, revised, and amplified. In several instances the data were then discussed in fuller form, in materials co-authored by the present writer, so as to allow maximum relation to the theoretical problems of broader relevance to the project as a whole.

Special assignments to particular individuals, futhermore, filled in various lacunae in reference to over-all coverage of the phonological and grammatical hierarchies. The latter were principally in focus. Lexical (or related semantic) problems were not dealt with at any length, but left for further study.

The following list of Niger-Congo languages of West Africa attempts to place them in some kind of genetic order--following Greenberg's groupings (shown by his code symbols such as IA3) occasionally supplemented by unpublished data and calculated guess where necessary, from Bendor-Samuel, who also supplied me with crude estimates of numbers of speakers of these languages.

NIGER-CONGO LANGUAGES (after Greenberg)

	Country	Estimated Population
Gur (Voltaic) IA3		
Grusi IA3c		
Kasem	Ghana	45,000
Vagala	Ghana	10,000
Sisala	Ghana	60,000
Dagaari IA3d	Ghana and Upper Volta	200,000

	Country	Estimated Population
Bariba IA3f	Dahomey and Nigeria	100,000
Gurma IA3g		
Bimoba	Ghana	50,000
Basari	Ghana	40,000
Kwa IA4		
Akan-Twi IA4b	Ghana	
Degema IA4e	Nigeria	10,000
(related to Greenberg's Bini)		
Engenni IA4e	Nigeria	25,000
Igede IA4f (?)	Nigeria	10,000 (?)
Yachi IA4f	Nigeria	12,000
Izi IA4g	Nigeria	200,000
Benue-Congo IA5		
Abua	Nigeria	20,000
Agbo IA5C (?)	Nigeria	15,000
(related to Mbembe)		
Bette IA5C1	Nigeria	
(related to Bekwana)		
Mbembe IA5C3 (?)	Nigeria	50,000
(related to Ukelle; rather than to Greenberg's Mbembe)		
Bantoid IA5D		
Etung IA5D	Nigeria	10,000

Concordances made from texts in Vagala and Sisala were produced at the University of Oklahoma by the Linguistic Retrieval Project for Aboriginal Languages, partially supported by National Science Foundation grants GS-270 and GS-934. Input data on magnetic tape are archived at the University of Oklahoma.

FOOTNOTES

[1] *An Introduction to Morphology and Syntax* (Santa Ana, Calif.: Summer Institute of Linguistics) 1962.

Or the fuller treatment by Robert E. Longacre, *Grammar Discovery Procedures* (The Hague: Mouton and Company) 1964.

[2] For example, for syntax, Kenneth L. Pike, "A Syntactic Paradigm," *Language*, 39.216-30, 1963; or K. L. Pike "Dimensions of Grammatical Constructions," *Language*, 38.221-44, 1962; for morphology, K. L. Pike, "Non-linear Order and Anti-redundancy in German Morphological Matrices," *Zeitschrift für Mundartforschung*, 32.193-221, 1965.

[3] K. L. Pike, "A Guide to Publications Related to Tagmemic Theory," *Current Trends in Linguistics*^{3}*: Theoretical Foundations*, (T. A. Sebeok, Editor) (The Hague: Mouton and Company)1966, pp. 365-394.

[4] Kenneth L. Pike, *Language in Relation to a Unified Theory of the Structure of Human Behavior*, Second Edition (The Hague: Mouton and Company) in press. (Preliminary edition Vol. I, §1-7, 1954; Vol. II, §8-10, 1955; Vol. III, §11-17, 1960.)

[5] See Zellig S. Harris, "Discourse Analysis," *Language*, 28.1-30 (1952).

[6] For example, in its early form in his *Syntactic Structures*, (The Hague: Mouton and Company) 1957.

[7] Floyd G. Lounsbury, "A Semantic Analysis of the Pawnee Kinship Usage," *Language*, 32.158-94 (1956): Ward H. Goodenough, "Componential Analysis and the Study of Meaning," *Language*, 32.195-216 (1956).

[8] See my *Language*..., III, p. 36.

[9] *Grammar*..., pp. 24-34. The need for grammars to be able to generate sentences, however, has long been implicit in the presentations such as that of Doris Cox, "Candoshi Verb Inflection, "*International Journal of American Linguistics*, 23.129-40 (1957) (where verb structures are given in detail) and that of William Wonderly, "Zogue I: Introduction and Bibliography," *International Journal of American Linguistics*, 17. 1-9 (1951) where the need for productivity of formulas beyond the limits of a closed corpus is insisted upon--and found necessary for persons who wish to do grammatical analyses as a basis for creating a written literature in a language.

[10] The Summer Institute of Linguistics has work going on in more than 350 languages. The researchers of these languages have all been exposed, to some degree, to tagmemic concepts. When a component of the theory would not work in these contexts it was revised.

[11] For example, K. L. Pike, "Beyond the Sentence," College Composition and Communication, 15.129-35 (1964); and Alton Becker, "A Tagmemic Approach to Paragraph Analysis;" College Composition and Communication, 16.237-42 (1965).

[12] Cf. Philip Bock, The Social Structure of a Canadian Indian Reserve, Harvard University Ph.D. Dissertation, 1962; and Philip Bock, "Social Structure and Language Structure," Southwestern Journal of Anthropology, 20.393-403 (1964).

[13] K. L. Pike, "Nucleation," The Modern Language Journal, 44.291-95 (1960).

[14] See now, however, Joy McCarthy, "Clause Chaining in Kanite," Anthropological Linguistics, 7.5.59-70 (1965).

[15] In "Tonemics, Morphotonemics, and Tonal Morphemes, "General Linguistics, 4.1-9 (1959). I had not known of this phenomenon when I published my book on tone languages in 1948.

[16] Versus my skepticism concerning this possibility expressed in my Tone Languages (Ann Arbor: University of Michigan Press) 1948, p.11 fn 22.

[17] See his "Tongue Root Position in Akan Vowel Harmony" (forthcoming).

CHAPTER I: CLAUSES

In this chapter clauses are in view, and the central question is: Can clause typology, structure, and dynamics for an area as a whole be conveniently discussed in a tagmemic framework? Can we, that is to say, study the selected basic likenesses--or differneces--in a substantial number of languages (whether closely related, distantly related, or unrelated) without being overwhelmed by detail? In this chapter we attempt to show, on preliminary African data, that the answer to each of these questions is definitely yes. More detail must await the publication of articles and monographs now in preparation.

1.1. Clause Typology

The data on which this chapter is based have been gathered only in a preliminary form. One special caution grows out of this: The reader must not argue from silence. Whereas any particular datum reported is present in the language concerned (although, even here, later revision may in some instances yet cause changes), the absence of a clause type in the tentative description has far less probability of continuing to be confirmed.

Precisely here a prime heuristic value of the preliminary cross-language comparison is in evidence: Languages of a particular area, from the same language family, often share many grammatical characteristics; an item reported in one suggests a search in texts (or, with due care, with the help of an informant) for the comparable type in the second. If the type does not occur in a large body of text, and if the informant will not create such a form (as a translation of an English eliciting model), or rejects suggested forms created by the analyst on an analogical basis, the absence then appears to be more significant, and may enter the permanent description as a null cell in the clause matrix.

1.1.1. Basic (Kernel, Nuclear) Clause Types

The first generalization for the region[1] of West Africa: within the nucleus of their clause systems (i.e., within the kernel, and so basic or central to the system) the languages have the clause set:

Intransitive (without object)
Transitive (with optional direct object)
Ditransitive (with optional--or obligatory--indirect object)

This at first seems either trivial, because expected human nature requires--on occasion--reference to an action by someone without reference to another dramatis persona (or element) involved; action by one person or element on another; and action by a first party on a second party or item, in reference to a third. These same data seem important if one is searching for language universals, since the human necessity for the presence of these relationships by no means requires that they be formalized in every language in the same way.

Precisely here some elegant formal surprises creep in: A kind of arbitrariness, overriding universal probability, becomes formalized. Normally in Twi, for example, J. M. Stewart[2] has shown (1) that when two pronouns are expected after a verb, the first as indirect object and the second as direct (paralleling the normal occurrence of two nouns in this position) the construction is not allowed to occur, because of a restriction which allows the pronoun to come only directly after the verb, and not after another pronoun. The desired communication effect, therefore, is achieved by replacing the construction with a more complex form (which will be further discussed in §2.2).

The etically expected--but unallowed--

* ɔ - femm me no
* 'He-lent me it'

(analogous to the acceptable

ɔ - femm me ne pônkô nó
'He-lent me his horse that')

is replaced by the acceptable

ɔ - de nó femm me
'He-take it lent me'

paralleling the optional--also acceptable--

ɔ - de ne pônkó nó femm me
'He-take his horse that lent me'

Stewart also shows that a further restriction applies [with ditransitive verbs]. With'give,' for example, the possibilities for the direct object not only exclude the pronoun (after the indirect object) but also exclude a definite nominal object in that position; only an indefinite nominal is allowed there.

Thus the definite

* ɔ - de me siká nó
*'He-gave me money the'

must be transformed into the more complex

ɔ - de siká nó maa me
'He-take money the gave me'

Whereas the indefinite

ɔ - maa me siká
'He-gave me [some] money'

does not need to be transformed. But this restriction, like the one on pronoun objects, could not have been predicted by etic probabilities--i.e., by human cultural universals or near-universals

If, furthermore, one wishes to say

'He cut the meat with a knife'

one finds (still using Stewart's data) that no simple clause will permit it. A complex construction is necessary for the expression of the instrumental relation, even when an indefinite noun phrase is used:

ɔ - de sέkán twaa nám nó
'He-take knife cut meat that'

Here a universally expected etic relation, expected with a high degree of probability within simple clauses, is realized only through a different kind of construction. The result is that the list of non-complex clauses will appear to have an etic gap at this point; and complex constructions (clause clusters, see §2.2) will be forced to occur more frequently and to be more varied in kind, than one might have guessed.

The implications of the preceding data for an etics and an emics of clause analysis are at least three:

(1) A compilation of known clause types is needed, classified in some convenient way. Preferably, experience shows us, this should not be a mere random list of types, nor even a hierarchy of successively more inclusive types only, but rather (a) some kind of dimensioned display (like a phonetic chart) with intersecting categories--which allows the reader to abstract classes, at will, from various viewpoints (from rows, or from columns, for example, rather than forcing, by a tree structure, some one predigested set), and (b) some device

for cutting unwieldiness (when the chart gets too large), through 'multiplication' of basic matrices by simple elements or by other matrices (or by some other kind of transformational device--e.g., by transformational commentary, if the complexity is little enough to make the matrix devices appear to be more cumbersome than needed).

(2) Emic analyses of clauses are needed, one language at a time. (a) The sum of these emic clauses becomes the list for a general--universal--etics under (1). (b) The specific emic clauses need to be studied for variation, as seen for the Twi constructions containing pronoun forms and definite object forms discussed above. (c) In order to differentiate these variants from the emic clauses themselves, contrast between emic clause types must be specified.

(3) Since, (a), it is apparent in the Twi data that specific tagmemes or even manifesting variants of tagmemes within a clause--e.g., the direct object--may affect the possibility of the occurrences of that clause, and since (b) a concept such as instrumentality, which in other languages may be often found manifested by a tagmeme within a clause but here is realized, rather, on a different hierarchical level, it is important, before analysis is assumed to be complete, that the analysis based on--for example--clauses abstracted from text be supplemented by eliciting techniques (with the safeguards necessary and appropriate to all eliciting techniques) one must see how a particular language expresses those various kinds of concepts reported in other languages, expressed in some of them within clauses, and assumed to represent human conceptual universals.

On the other hand, it is important that the clauses of each language be studied in reference to its own system, for their distinguishing, contrastive, formal and informal features; for their kinds and ranges of variability; and for their structural and transformational relations to, and distribution within, higher-level or lower-level structures. If one then chooses to do so, comparison of one area--e.g., West Africa--can be made with other areas of the world. This, however, is a goal beyond the purview of our present study--but within the larger goal of which this study has been but one part.

With these elements now more explicitly in mind, we return to the listing of some clause types observed in West Africa--a list begun, above, with mention of the intransitive, transitive, and ditransitive.

Probably most, if not all, of these Niger-Congo languages have also a clause type which may be called Locative (or Directive). (Reported, in our data, for Dagaari, Vagala, Kasem, Bariba, Mbembe.) In Mbembe, for example, a small number of verb roots are classified as directives: yin come, go, fetch', and ta 'go' being among the most common. They are often followed directly by a noun indicating a place (e.g., ɛᵽyá 'market', or a prepositional phrase made up of a preposition plus one of these nouns:

ɔ̀ - ṭa   ɛ́ᵽyá
'He-goes market'
or: ɔ̀-ṭá   sa   ɛ́ᵽyá
'He-goes   to   market'

See, also, Bimoba:

n saa   daak   nie
I am-going market   in
'I am going to market'

Considerably uncertainty[3] has come when analysts have attempted to treat the locational noun as a direct object of locational-directive verbs such as these, since the locational clauses contrast with transitive clauses not only by the potential expansion of locative noun to locative prepositional phrase, but also in that they cannot undergo certain transformations allowed to the transitives:

òte ó'cí étèn
'Father eats meat'
or   ɔ̀te   ɔ́'tɔ́ga   étèn   ɔ̀cí   (cf., above, similar transformation with indirect object)
'Father   takes   meat   eats'
but not   *ɔ̀té   ɔ́'tɔ́ga   ɛ́ᵽyá   ɔ̀·ta
*'Father takes   market   goes'

nor may the directive--as different from transitive--function as the first element of a result clause composite.

In Twi (continuing with Stewart's data) there seems to be a restriction such that locative noun phrases may follow certain locative verbs, but the same locative expressions may not follow--where we might expect them to--certain other verbs plus object; we cannot say, there

*kofĭ   guu   ntomá   nó   á-ꜝdí ꜝká   nó   mú
*"Kofi put the cloth in the box'

even though it is acceptable to say

ntomá nó gu adá!ká nó mú
'The cloth is in the box'.

Mbembe, however, does allow a locative phrase, after direct object, and also the corresponding complex form:

ɔ̀-yí'ga íjɔ̀:g ña ɛ́kpà
'He put snake in bag'
ɔ-tɔ́ga íjɔ̀:g ɔ̀-yígá ña ɛ́kpà
'He-took snake put in bag'

An alternative hypothesis which might well be explored for Mbembe (and Twi?) would be to set up a pair of clause types:

Locative-intransitive
and Locative-transitive

(with 'go' and 'put' as typical of their verbs) contrasting with each other and with the regular intransitive and transitive. I do not know how this would work out in view of the whole system.

In most of these languages (e.g., Dagaari, Vagala, Kasem, Bariba, Igede, Mbembe, Degema,) one finds some kind of:

Stative.

For Dagaari note:

ù zòng
'He is-blind'

For Vagala, note the alternative forms:

ù wéysó
'He is-good'
or ù dú wéyr
'He is good'

Occasionally this area of form and meaning is divided by the authors into Equative (or Copulative) and Stative, in which the equative has a predicate nominative, and the stative a special verb plus predicate adjective, or a verb which carries both the affirmative and the quantitative (as in the Vagala example just given). For Degema, compare:

ɔ́mɔ́-yɔ̀ aɓ!ɔ́
'[The] child-emphatic is-there' (stative)
ɔ́mɔ́-yɔ̀ ɔ̀-yín ɔ́mɔ́-mɔ̀sì

(child-emphatic 3rd-sg.-be child male)

'The child is a male,'

A futher pair of emic (contrastive) clause types posited for some of these languages (Dagaari, Vagala) is:

Descriptive versus Demonstrative.

In Dagaari, for example, special verb forms differentiate these from each other, and from statives and intransitives. In addition, the subject of the demonstrative clause is an emphatic type, and demonstrative tagmeme following the verb may be manifested by a demonstrative particle--and other items--not found in the slot following a descriptive or stative verb.

ù	wàà	nīng-kpowng
'He	is	person-king'

únɔ́	lá	à	dɔ́ɔ́
'He(emph)	is	the	man'

Less clear, but probably necessary to add to the list of numerous West African languages is the

Impersonal.

In Kasem, some clauses with the subject ku 'it' differ in function from intransitive clauses which superficially look like them. In a clause cluster (or series, see §2.2), for example, the impersonal pronoun subject may occur within the series which has a different pronoun subject, where Kasem otherwise would require uniformity. Note the ó...ó series with intervening kú:

...ō	vùw	ō	lòowri	kú	mángi	dí	súwla	fíñtò	ō	gyā	bà
he	go	he	beg	it	approx.	with	shillings	thirty	he	take	come

'He went out and obtained thirty shillings by begging and brought it back.'

In Bimoba the impersonal, as distinct from the intransitive, cannot be followed by other basic clause types in a series (§2.2.2).

1.1.2. Derived (Marginal) Clause Types

If a clause system is assumed to have nuclear (as in §1.1.1.) and marginal elements--i.e., if the system itself is viewed as having a "wave" form--then the marginal kinds of clauses are those which can be treated as in some sense derivable from--or peripheral to, or transformed from--the nuclear system. Several kinds of peripheral clauses occur in various of the Niger-Congo languages:

Modal: Interrogative, Imperative, Subjunctive
Qualitative: Negative
Emphatic
Causal
Benefactive
Dependent: Subordinate, Relative

In Dagaari, for example, all basic types can be transformed to interrogative and imperative modes, as well as to negative and emphatic types (data not available concerning causative or benefactive).

Mbembe is set up by Barnwell, tentatively, as having basic intransitive, transitive, ditransitive, copulative, directive, motive (i.e., a directive after a verb which takes an object, as in 'Father sends [the] child [to fetch] meat'), stative, initiative (as in 'Father begins meat to-eat'), independent introductory, dependent introductory. Each of these can be transformed into imperative, subjunctive, interrogative, subordinate, and relative--though some of the forms have thus far been found only in elicited data, and not in text. Contrastive features of form and meaning differentiate the types. Imperative, for example, has obligatory absence both of independent subject (with one exception in the data) and of person and tense subject prefixes; certain imperative verb prefixes (ma-plural); and imperative tone patterns.

Contrast:

òte ó'ci étèn
'Father eats meat'

with ci étèn
'Eat meat'

The negatives in Mbembe--and various other West African languages--are so different from the positives that analysts sometimes prefer to set them up as separate clause types, derived from the positive ones. Mbembe negative imperfect indicative moves the predicate to the end of the clause, adds a negative verbal prefix -m, utilizes a distinctive tone pattern (`´); and utilizes a Group 1 vowel for the final vowel of the verb. Compare:

òte óci étèn sa ɔ́sɔ̀:m
'Father eats meat in house'
òte ètèn sa ɔ́sɔ́:m mòcí
'Father meat in house won't-eat'

The perfect indicative contrasts with the imperfect by having the predicate follow the object (but precede the locative margin); with object (or predicate) preceded by clitic k'; with different tone patterns; and with verb-suffix -a. From this the corresponding negative has predicate as clause final; negative verb prefix k'; a further distinctive tone pattern; and a Group 2 vowel as final in verb:

òté k'étèn ɔ̀cá sa ɔ́sɔ̀:m
'Father meat ate in house'
òte étèn sa ɔ́sɔ̀:m k'ócí
'Father meat in house hasn't-eaten'

Imperative and subjunctive, etc., have further changes for negative.

Some scholars feel that the extensive changes for aspect, as seen above for Mbembe, make it desirable to treat these as transforms also. Kennedy, for Dagaari, first sets up a matrix to show basic types (with possibility of transforms to emphasis, mode, and dependency--see Dagaari Matrix I; note gaps--signalled by hyphens--for *imperative stative, and *imperative demonstrative, as well as limitation of locative and demonstrative forms to positive qualities only.(Negative locative concept is expressed by a special negative verb--not by a regular verb negated by a particle--and that negative verb must be followed by a locative word béy 'there', as in ù ché béy 'He is-not-located there'.)

DAGAARI MATRIX I: Occurrence-Matrix of Basic Clause Types with Some Permitted Transformations

Transformed to:	Tense	Emphatic	Interrogative	Imperative	Dependent
Basic Form (in Perfective or Imperfective Aspect)					
Ditransitive	x	x	x	x	x
Transitive	x	x	x	x	x
Active (Intransitive)	x	x	x	x	x
Locative	Positive only	x	x	x	x
Stative	x	x	x	-	x
Descriptive	x	x	x	x	x
Demonstrative	Positive only	Subj. only	x	-	x

Each cell in the Dagaari matrix can be filled, in turn, by a submatrix of clauses or clause variants. (See the accompanying Matrix II, of Tense and Quality Transform Types). The implication here is that, tentatively, negative and tense forms are treated as contrastive types. Note, as illustrative:

ù dà zów
"He did run'
ù dà bá zòw
'He did not run'
ù nà zów
'He will run'
ù kówn zów
"He will-not run'

DAGAARI MATRIX II: Permitted Tense and Quality Transform Types

	Tense ± Past	+ Future
Positive	± dà 'past' dáá 'far past' zàà 'yesterday'	+ nà
Negative	± [as above] + bá	+kòwn

Even with these differences of form, however, many investigators (like Crouch for Vagala in §1.2) would undoubtedly prefer to treat clauses marked for tense as etic variants (optional expansions) of the basic clauses--which already include, in the verb stem, signals for aspect [4] (perfective or imperfective). Thus negative changes might be treated differently from tense. Tagmemic theory focuses on etic versus emic differences but--in spite of R. Longacre's [5] dual structural criterion some intermediate situations such as the negative remain doubtful. Whether this is due to the permanent indeterminate nature of the data, or to lack of adequate theory or method, is not known.

Emphasis in Dagaari leads to classes of emphatic clauses, differing as to the included tagmeme which is emphasized. Non-subject tagmemes may be emphasized in any basic clause type, or any derived by the modal and tense-or-quality clauses just discussed, by shifting the emphasized tagmeme--to a position before the subject--and adding to it kà which in turn is preceded optionally by lá. Subject, when emphasized, is followed by lá; a nonemphatic pronoun is replaced by an emphatic one.

For Bariba, several kinds of clauses are reported, by Soutar, which have not been seen in the preliminary data concerning the basic clause types of Dagaari, Vagale, and Mbembe. (Note the causal and benefactive elements.)

For the Bariba, Soutar lists certain clause types, expanding the list with sub-matrices to show some inner-layer transformation potential, for derived benefactive, reciprocal, and passive types.

I. Bariba Basic Clause Types -- Independent

A. Intransitive:

	Norm	Benefactive	Reciprocal-Benefactive
Norm	1	3	5
Causal	2	4	6

B. Directive:

Numbers 1 to 4 in above chart

C. Transitive:

	Norm		Passive		Reciprocal	
	Norm	Benef.	Norm	Benef.	Norm.	Benef.
Norm	1	3	5	7	9	11
Causal	2	4	6	8	10	12

D. Ditransitive:

Numbers 1-5 and 9-12 in above chart.

E. Stative:

F. Equative:

1. Subjective complement
2. Objective complement

II. Basic Clause Types -- Dependent

A. Introducer

These are now illustrated, giving first a detailed list of the lexical items to be used, followed by a citation paradigm with examples numbered according to the clause list, followed in turn by tagmemic formulas for these clause types.

List of Lexical Items

na	- 'I'	mam	- 'me'
u	- 'he'	wǐ / nùḿ	- 'him'
sa	- 'we'	bù	- 'them'
ba	- 'they'		
wí	- 'he' emphatic		

kukè (St. kukù)	- 'hide'	-sia	- 'causative'
kpūnā	- 'lie down'	-na	- 'reciprocal'
dā (St. daa)	- 'go'	-ra	- 'passive'
wa (St. waa)	- 'see'	Tone change	
nɔ̂ (St. nɔɔ̀)	- 'hear'	-a/-wa/-ya	- 'benefactive'
wɛ̄ (St. wɛ̃ɛ̃)	- 'hand over'		
kɛ̄ (St. kɛ̆ɛ̃)	- 'give'		
wésīā	- 'give back'		
bārɔ̄	- 'be sick'		
sàà	- 'to be'		
soku	- 'call'		
kō (St. koo)	- 'do'		
dwē (dwi)	- 'buy'		

gbèrū	- 'farm'	tààrɛ́	- 'blame'
gobi	- 'money'	tɔ̀nū	- 'person'
tasu	- 'yams'	bé	- 'those'
gari	- 'words' / 'matter'	fɛ̃ku	- 'common cold'
bìī	- 'child'	sùnɔ̄	- 'chief'
yiǹni	- 'master'		

Citation Paradigm

I. Independent

A. Intransitive

1. u kukùà 'He hid'
2. u nùń kukù - sīā 'He made him hide'
3. ba mam kpunā (tonal morpheme for benefactive)
   'They lay down for me (prostrate themselves before me)'
4. u man nùḿ kpunà - sìâ (tonal morpheme for benefactive)
   'They made him lie down for me'
5. ba kukù - nâ (tonal morpheme for benef.)
   'They hid for each other (from each other)'
6. u bù kukù - nà - sìâ (tonal morpheme for benefactive)
   'He made them hide from each other.'

B. Directive:

1. u gbèrù dā 'He went to farm'
2. u mam gbèrù daà - sīā 'He made me go to farm'
3. u mam gbèrù daā (tonal morpheme) 'He went to farm for me'
4. u mam bù gbèrù daà - sìâ (tonal morpheme)
   'He made him go to farm got me'

C. Transitive

1. na bù wa 'I saw them'
2. na bù gobi wáá - sìā 'I made them see (obtain) money'
3. na bù tasu wáá - wâ 'I found yams for them'
4. u mam bù gobi wáá - sìâ (tonal morpheme)
   'He caused them to find money for me'
5. tasu waarā 'Yams were found'
6. ba gari nɔɔ̀ - rà - sìā 'They caused the words to be heard'
7. sɔ̀bùra man koò - râ (tonal morpheme) 'The work was done for me'
8. ba man gari nɔɔ̀ - rà - sìâ (tonal morpheme)
   'They caused the words to be heard for me'
9. ba waa - nā 'They saw each other'
10. na bù waa - ná - sìā 'I caused them to see each other'
11. ba yàbènù dwi-à - nâ (tonal morpheme) 'They bought shirts for each other'
12. na nùń wíḿ bìbù waa - ná - sìâ (tonal morpheme)
    'I caused his children to see each other for him'

D. Ditransitive:

1. u man gobi wɛ̄ 'He gave me money'
2. u mam bù gobi wɛ̄ɛ̄ - sīā 'He made them give me money/ He made me give them money'
3. u mam bù gobi wɛɛ̀ - yâ 'He gave them money for me'
4. ba man wǐ tɔ̀m̀ bɛ́ gobi wɛɛ̀ - sìâ
   'They made him give those people money for me'
5. bīi sun kɛ̄ɛ̄ - rā 'A child was given to us'
6. ba tààrɛ́ wɛ̄ɛ̄ - nā 'They gave each other blame (They blamed each other)'
7. sa bù gari wesíá - ná - sīā
   'We caused them to give words back to one another (to discuss the matter)'
8. ba sun (gari) wesíá - nâ (tonal morpheme)
   'They discussed the matter for us'
9. ba sum bù gari wesíá - ná - sīâ (tonal morpheme)
   'They made them discuss the matter for us'

E. Stative:

1. na bār̈ɔ̄ 'I am sick'
2. na fɛ̀ku bārɔ̄ 'I have a cold (I am cold sick)'

F. Equative:

1. u sàà sùnɔ̄ 'He is chief (a chief)'
2. wí - yá sùnɔ̄ 'He is the chief'
3. wí ȁuǹɔ - wá 'He is a chief'

II. Dependent:

A. Introducer:

1. u nɛɛ̀,.... 'He said,...'
2. u bù sɔ̄ɔ̄wa 'He told them.....'

This material from Bariba in Dahomey seems so different from Dagaari, Vagala, and Kasem of Ghana and from the Mbembe and Degema of the lower part of Nigeria, that I re-checked, after these pages were written, with Crouch concerning Vagala. Somehow, the cultural universals of causation and benefaction would have to be expressed in them also. Had the Bariba type of data been overlooked in these other languages, or did it in fact not exist?

Here, once more, the semantic features found their expression in clause clusters (§2.2, or subclusters, §2.2.5)--rather than in single clauses with extra tagmemes within the verb (i.e., as affixes) or outside the verb but within the single clause.

Compare the following Vagala set for simple normal transitive, with the corresponding causative transitive cluster and the corresponding benefactive cluster:

ù é ꜝkéyŋg
'He did this'
ù gȉl ǹ è kéyng
'He made him do this'
ù é ù té ń
'He did it gave me'
'He did it for me'
ù wà sá ꜝígyò tè ȕ bówi
he came danced igyo-dance give his village
'He danced the igyo-dance for his village'

We have, then, a major difference in "grammatical style" between the two languages. The Vagala uses certain clause clusters where the Bariba might use single or complex clauses. The Bariba, at this point, looks typologically much more like Bantu languages--as we shall see in §1.5 for Bobangi--than does Vagala. The structure and frequent use of clause clusters such as these of Vagala, furthermore, is one of the most striking--and typical--of the characteristics of many of the West African languages. We will discuss these complexes more specifically in §2.2.

1.2. Clause Contrasts

First, however, we must discuss the structural markers of contrast between simple clauses and the kinds of variation they undergo.

For Vagala, we take from Crouch a syntactic paradigm in two parts: First, a chart (or matrix) in which independent, basic clause types form the rows, whereas specific tagmemes or (for the predicate) classes of tagmemes form the columns. If a tagmeme may (or must) occur as part of one of these clause syntagmemes, it is included in the row, at a place of its most frequent or stylistically normal occurrence. Free variation of order is not signalled here.

TENTATIVE TAGMEMIC-NOTATION PARADIGM FOR BASIC CLAUSE TYPES IN VAGALA

	Nuclear Tagmemes					Marginal Tagmemes		
Ditrans.:	+ Subject $NP_{1(all)}$ NP_{2a} NP_{4a} $NP_{5a,b}$ NP_{6}	± Tense* future, time, subjunct. particles	+ Dit.Pred. $DitVP_{1a}$ 2 3	+(± I.Obj. $NP_{1a,aa,d}$ NP_{2a} NP_{4a} $NP_{5a,b}$ NP_{6}	± Object) $NP_{1a(all)}$ NP_{2a} NP_{4a} $NP_{5a,b}$ NP_{6}	± Manner adverb NP_{2b} NP_{3b}	± Location locative loc. noun NP_{3a} NP_{5d}	± Time temporal NP_{1c} NP_{2c} NP_{3c} NP_{4c} NP_{5c}
Trans.:	+ Subject same	± Tense same	+ Trans.Predicate $TrVP_{1a}$ 2 3		± Object same	± Manner same	± Location same	± Time same
Intrans.:	+ Subject same	± Tense same	+ Intrans.Pred. $InVP_{1a}$ 2 3	± Loc.-Acc. NP_{3a}		± Manner same	± Location same	± Time same
Locative:	+ Subject same	± Tense same	+ Loc. Predicate $LocVP_{1a}$ 2 3	+ Loc.-Acc. same		± Manner same $-NP_{3b}$	± Location same	± Time same
Stative 1:	+ Subject same	± Tense same	+ St_1Predicate $StVP_{1a}$ 2 3			± Manner same -3b	± Location same	± Time same
Stative 2:	+ Subject same	± Tense same	+ St_2Predicate du	+ Adjective adjective numeral NP_{1aa}(+num.)		± Manner same -3b	± Location same	± Time same
Descr.:	+ Subject same	± Tense same	+ Des.Predicate $DesVP_{1a}$ 2 3	+ Complement $NP_{1a,aa,b}$ NP_{4a} $NP_{5a,b,c,d}$ NP_{2a}		± Manner same -3b	± Location same	± Time same
Demons.:	+ Subject Emphatic $NP_{1a(all)}$ " NP_{2a} NP_{4a} $NP_{5a,b}$	± Demonstrative $NP_{1a,aa,b}$ $NP_{4a,b}$ $NP_{5a,b,d}$ NP 2a locative 1a	± Tense restricted time and adverbial particles, subjunctive					

* The order of manner, location, and time tagmemes is not rigid. Some tense and time elements have co-occurrent relations not shown here.

(See, however, the footnote to the chart, indicating that the order of peripheral tagmemes of manner, location, and time is not completely fixed. Often, in tagmemic formulas of this kind, arrows from one place in the string to another show free variation of position.) Contrastive change, for emphasis, has been discussed in §1.1.2. When a tagmeme is obligatory, it is preceded by a plus sign: if optional, by ±.

Note that, in each instance, any two of these emic clause formulas differ both by their predicates (or absence of predicate in demonstrative) and by one other tagmeme (presence or absence of object, adjective complement, etc.), whether obligatory or optional. The demonstrative differs from other clauses by its lack of marginal tagmemes.

Underneath each tagmeme is given in a small subcolumn a preliminary list of the classes of items or constructions which can fill that tagmemic slot, and which, along with the function named by the tagmemic label, comprises the tagmeme as a whole--i.e., the function set. Abbreviations for the constructions include:

NP_1	Basic noun phrase
NP_2	Relative noun phrase
NP_3	Locative noun phrase
NP_4	Possessive noun phrase
NP_5	Coordinate noun phrase
NP_6	List noun phrase
VP_1	Simple verb phrase
VP_2	Pre-modified verb phrase
VP_3	Post-modified verb phrase

Subscript letters to the classes (e.g. NP_{1a}) indicate further relevant subsets of nouns (or verbs). These do not interest us at the moment--but such classes are important for the productive use of language. To whatever extent this tentative listing proves to be erroneous, it implies the possibility of forms not permitted by the system. This compacting display provides restrictions on occurrence of phrase type by the context of clause type. The generative power of a tagmemic presentation works, in part, by this type of predictive formula.

The + (±0 ±0) form indicates that one or the other--or both--of the objects must be present; but if indirect object is present, direct object is not required, and vice versa.

Two locatives may occur in certain of these constructions--the first (locative-accompaniment) as part of the nucleus, and the second within the margin. The nuclear locative is obligatory to the locative clause; the marginal one is optional there:

ù dú Sàwlá ù mà̀á béy
he is-at Sawla his mother vicinity
'He is at Sawla with his mother' (Sawla, main locative;
with his mother, marginal locative)

In the locative and intransitive clauses, the nuclear locative (like the object of a transitive verb, or the indirect object of a ditransitive verb) is moved to the position before the verb when the clause is negative in non-future time (but not shifted with negative future). This characteristic, among others, leads to treatment of the first locative (or locative-accompaniment) as nuclear.

The same marker ní used for locative may, after some verbs, be used in the same position with meaning of accompaniment:

ù bà ù ní bówl
he came it with village
'He came with it to the village.'

The two come together in a sequence of locative-accompaniment and locative in:

ǹ dáng !lá ì ní bówl
I will go you with village
'I will go with you to the village.'

We also give, from Crouch's data, a citation paradigm in matrix form illustrating the basic types of clauses. In order to keep to space requirements, only nuclear tagmemes are illustrated. This kind of citation display allows quick access to contrastive illustrations since no more variety of lexical selection is used than is necessary. The reader is to assume that each lexical change is caused by a change of emic structure (or occasionally by etic agreement characteristics, etc.)

Added to this matrix are a column of imperatives, and three columns of dependent clauses--for normal, purposive, and conditional.

When two inner (tagmeme) contrasts cannot be seen in a citation pair, then a further contrast may be expected, either (a) in the potential occurrence of optional expansions (the optional occurrence of a tagmeme--say, object--which

	INDEPENDENT		DEPENDENT		
	Regular	Imperative	Regular	Purpose	Conditional
Ditr.	IDi ù té ǹ kàbílà He gave me fufu.	IImDi té ń kàbílà Give me fufu!	DDi ù ǹ té ǹ kàbílà When he gave me fufu	DPDi ú té ǹ kàbílà In order to give me fufu	DCDi dì ù té ǹ kàbílà... If he gives me fufu...
Trans.	IT ù ló kàbílà He pounded fufu.	IImt ló ká!bílà Pound fufu!	DT ù ǹ ló kàbílà... When he pounded fufu...	DPT ú ló ká!bílà in order to pound fufu	DCT dì ù ló kàbílà... If he pounds fufu...
Intr.	IIn ù lá yaú!wá He went market.	IImIn là yaùwá Go to market!	DIn ù ǹ lá yaú!wá When he went to market...	DPIn ú lá yaàwá In order to go to market	DCIn dì ù lá yaú!wá If he goes to market...
Loc.	IL ù dú Sàwlá He is-at Sawla	IImL dú Sá!wlá Be-at Sawla!	DL ù ǹ dú Sàwlá... When he was-at Sawla...	DPL ú dú Sá!wlá in order to be-at Sawla	DCL dì ù dú Sàwlá... If he is-at Sawla...
Stat.1	IS$_1$ ù wéysó He is good.		DS$_1$ ù ǹ wèysé... When he is good...		DCS$_1$ dì ù wéysó... If he is good...
Stat.2	IS$_2$ ù dú wéyr He is good.		DS$_2$ ù ǹ dú wéyr... When he is good...	DPS$_2$ ú dú wéyr in order to be good	DCS$_2$ dì ù dú wéyr... If he is good...
Descr.	IDs ù é nábòmá He is an elder.	IImDs è nàbòmá Be the elder!	DDs ù ǹ é nábòmá... When he was the elder...	DPDs ú é nàbòmá in order to be an elder	DCDs dì ù é nábòmá... If he is an elder...
Demons.	IDm wábú nábòmá He is the elder.				DCDm dì wábú nábòmá... If he is the elder...

may occur in a more extended sample of the one clause but which may not occur in the other); or (b) in differences of potential for transformation to another clause type (or in differences, that is, in their potential for coming in same cells in matrix multiplication), or (c) in differences in occurrence of the clauses, as wholes, in still higher-level slots--as, for example, in the slot for answer to a *question* versus reply to a statement, etc. Relevant emic differences include not only the differences of tagmemes *within* a construction, but also differences of the clauses, as wholes, comprising restrictions as to higher units *within which* the clauses may themselves be found. (Or, one may say, differences of internal and external distribution are both relevant; or emic contrasts include features drawn from different hierarchical levels.)

Specifically,

ù té ń kàbílà
'He gave me fufu-food'

contrasts with

té-ń káꜝbílà
'Give me fufu-food'

not only by the lack of subject of the imperative (and by tone) but also by the fact that 'Give me fufu-food' but not 'He gave me fufu-food' can come in the context:

Comment	Reply
té ń káꜝbílà	màá té í
'Give me fufu-food'	'I will not give'

Tagmemic theory requires that attention be given to such questions. It does not allow one to ignore, permanently, the significance of etic versus emix units, constructions, or levels--i.e., of contrast as against variation--at any point in the system.

1.3. Clause Variants

We turn, therefore, from the study of contrastive clause types to a discussion of types of variation within clauses of West African Niger-Congo languages. Several types occur: (a) optional presence of nuclear or marginal tagmemes, (b) optional orders of tagmemes, (c) optional kinds of fillers for tagmeme slots, and variant forms conditioned by occurrence in certain larger structures.

1.3.1. Variation by Presence of Nuclear Tagmemes

In the formulas of the first Vagala matrix, above, the diagnostic locative tagmeme is marked as optional in the nucleus of intransitive clauses. One can say not only

ù lángò
'He went'

but also

ù lá yaú!wá
'He went market'

The diagnostic locative-accompaniment tagmeme (manifested only by noun phrase NP_{3a}) plays its part in contrasting intransitive from transitive (whose optional object tagmeme has a different set of noun phrase manifestations). Whereas the optional presence or absence of the nuclear locative tagmeme of Vagala leads to free variants of a construction, the obligatory omission in Twi of the second of two pronoun objects (see §1.1.1.) leads to conditional gaps in the systematic pattern of ditransitive clauses. So, too, does the nonpermitted definite object after indirect object.

1.3.2. Variation by Optional and Marginal Tagmemes

On the other hand, the same Vagala matrix shows that manner, location, and time tagmemes are all optionally present with any of the basic clause types except the demonstrative. Thus they are not diagnostically useful to separate the ditransitive from transitive, intransitive, locative, stative, or descriptive (but it does help separate these, as a class, from the demonstrative). Since these tagmemes, relative to the class containing them, are both optional and non-diagnostic, they are treated as marginal. Compare:

Transitive:

Manner: yàá ló márfà kéyng
we shot gun thus

Location: ...dì gyà ló fáng!fánì ù nyùú máà
and there hit soap her head all
'...and there worked up a soap lather all over her head'

Time: kúná dýy ù sògmýá zínáà
things ate his corn today

Descriptive:

Location: ǹ fà é nézé!yńg né ǹ bówl bifynì
I past was man-big my village inside
'I used to be an important man in my village'

Other languages have different lists of optional tagmemes following the nucleus: Dagaari is reported with location, time, degree, manner--and instrumental-accompaniment. (Contrast, for the latter, discussion of lack of basic-clause instrumental for Twi, §1.1.1.). For Igede: adverbial, onomatopoeic (ideophones), time, and perhaps others. Degema: manner, location, time. Bariba (which, above, was very different from these other languages) agrees in having manner, location, and degree following the nucleus: but allows cause and time preceding it, and instrument or accompaniment tagmeme within it.

1.3.3. Variation by Order of Tagmemes

The early placement of the time tagmeme before the nucleus occurs in Degema and in Sisala, but as a variant from the postnuclear position. In Sisala, the placement has relevance to discourse structure (§3.2.1.). (See also, contrastive--emic--early placement for emphasis discussed for Vagala in §1.2.).

In addition, as footnoted in the Vagala matrix, there is, on rare occasions, another kind of variation--a free variation of order among the marginal tagmemes themselves.

We have earlier seen (§1.1.2) that Bariba differs substantially from our other West Africa samples, in the syntax structure of kinds of basic clause (versus clusters) it contains. So, too, it differs in relation to changes of tagmeme order within a clause.

Within Bariba causative and benefactive clauses, two or three "objects" may occur--direct-object-as-goal, indirect object, object-as-actor, benefactee. Only two personal pronoun objects can occur in a single clause; but a third pronoun may occur if it is nonpersonal. Within the constructions, furthermore, certain normal sequences of object (object-as-actor, and indirect object; object-as-actor and direct object; benefactee and object-as-actor; indirect object and direct object; benefactee and object-as-goal) will most frequently be reversed if--ignoring singular and plural--it is necessary to do so to get them to conform to a ranking system such that first person pronoun precedes second; second precedes third; third personal precedes third nonpersonal pronoun. Tagmemic function (indirect versus direct object, etc.) is ignored in determining this ordering. Infrequent orders sometimes carry special functions: when one repeats a clause, to answer a yes-no question, he is likely to change the order of pronouns.

1.3.4. Variation by Simple Substitution

It may also be assumed that emic clauses have etic variants (etic manifestations differing only by the particular element or elements filling one or more of their slots. This may be seen in three types. The first is the mere substitution of one member of a class for another member in that same slot, with no further relevance to the structure. One may say in Vagala:

	ù	kyó!wó
	'He	ran
or	ù	zánwò
	'He	jumped'

1.3.5. Variation by Substitution of Manifesting Constructions

A second--more interesting--type of variant is the substitution of members of different constructions as fillers of the same slot. For fillers of the subject slot in Dagaari, for example, Kennedy gives us:

(i) Pronoun Phrase:	± article	+ head	± quantifier
	the	pron	numeral
			Num P
			attribute$_{num}$
e.g.	à	tìy	mìnéy
	the	we	some

'(some of us)'

(ii) Noun Phrase$_{simple}$:	± art	± possessive	+ head	± quant
	a	pron	noun	as above
		noun		
		NP		

allos: (A) Occurs in possessive slot

± poss	+ head	± quant
tìy	dóbó	bátà
our	men	three

e.g.:	à	tìy	dobo	bata	zuw	kanga
	the	our	men	three	head	certain

('the head of one of our three men')

(B) Occurs elsewhere

	± art	± poss	+ head	± quant
e.g.:	à	tìy	nìngkpównì	bátà
	the	our	persons-big	three

'(three of our big men)'

(iii) Noun Phrase$_{coordinate}$: + NP/PronP + link + NP

	+ NP/PronP		+ link		+ NP
	as above		àní 'and'		as above
e.g.:			bííy 'or'		
	dóbó	bátà	àní	pógbó	bànáàr
	men	three	and	women	four

(iv) Numeral: bátà
three

(v) Numeral Phrase:

+ Num	link	+ Num
bátà	bííy	bànáàr
three	or	four

(vi) Clause$_{dependent}$: Dependent Transform of Basic Clause Matrix

1.3.6. Variation by Agreement (Concord)

Variation in clauses is also caused by the mutual requiring of particular members (one subset) of a class by particular members (a subset of another class, according to some formal structural or categorical pattern of agreement or concord.

None of this kind of variant occurs in the preliminary data of the languages so far discussed. It does occur extensively, however, in the data given us by Thomas and Eileen Edmondson for the Etung materials of Nigeria, which in this respect differ markedly in typology. In the Etung, the presence of different noun classes makes sharp differences in forms of numerous tagmemes within the clause. Note, for example:

ŋ̀kǒp	èyě	áñì	yɨt	
box	his	that	one	
bítí	èbê	ámbì	bɨ́t	mbí´
stick	his	that	one	which
ǹñì	à-gbòé!´	ńyèn	ńñî	
while	it-fell	I-have-seen	it	
bí-gbó!é	ń-yèn	ḿbî		
it-fell	I-have-seen	it		

Perhaps, if we had available more syntax data on this language, further typological elements of interest would emerge.[6]

1.3.7. Variation[7] by Occurrence in Clause Clusters

Some clause variants are conditioned by their occurrence as a serial (or secondary, non-first) member of a clause cluster (or clause series).

A close-knit series of clauses functions as a unit cluster within the sentence (§1.4). Within the cluster, linkages tie the clauses together. The formal[8] linkages involve the sharing of tagmemes. Two clauses in a series containing the same subject delete the second, sharing (noncontiguously) the first. The second object, when same as the first object, is also deleted. Stewart[9] has made these details explicit for Twi:

akorɔmá	nó	kyeree	akókɔ́	nó
hawk	the	caught	chicken	the

akorɔmá	nó	wee	akókɔ́	nó
hawk	the	ate	chicken	the

but

akorɔmá	nó	kyeree	akókɔ́	nó	wee
hawk	the	caught	chicken	the	ate

'the hawk caught the chicken and ate it'

The word wee of the last example may be seen, from one point of view, as comprising an entire serial clause, as a variant of an independent clause conditioned by coming in an emic cluster.

From a second viewpoint, the object belongs simultaneously--as a "portmanteau" tagmeme--to both clauses. This latter approach has the advantage of making it simple to discuss the "sharing" of a tagmeme (as I did a few paragraphs back) but the disadvantage of implying noncontiguous sharing of subject--or noncontiguous sharing of object.

A third view treats the cluster as a single complex unit. The advantage: The cluster, not the separate clause, is said to contain the "shared," non-repeated, elements. The disadvantage: One cannot as easily discuss clause in relation to basic and conditioned-variant forms. I shall leave the theoretical situation here indeterminate, and utilize that particular viewpoint (or combination of viewpoints) which is momentarily useful.

The non-Africanist, however, needs to be alerted to the extremely important role that clause clusters play in these West African languages. Not only do they occur as part of the inventory of available language apparatus, but they comprise part of the system necessary for the expression of various etic concepts such as instrumental (see §§1.1.1., 2.2.3.), and become an intermediate state in the dynamics of developing new forms of grammar as we shall see presently (§2.2.5).

An extensive illustration of suppression of shared independent subject (but differing from Twi by the retention of pronominal subject) and object is seen in Mbembe (where Barnwell refers to the domain over which a shared element is relevant as the 'wave of reference' of that element):

ìkwànɔ̀ŋ ɔ̀·ká'ɓa á'sí / ò-wònà / ò-gwó / ò-níŋa ɛ́wɔ̀r
woman she-fetches water she-pours she-drinks she-sits seat
'The woman fetches water, pours it, drinks it'

The underlying sentences would be:

ìkwànɔ̀ŋ	ɔ̀-ká˙ɓa	á'sí
woman	fetches	water
"	ò-wóna	"
	pours	
"	ò-gwwó	"
	drinks	
"	òníŋa	ɛ̀wɔ̀r
	sits	seat

The wave of reference for subject would be the entire cluster; for the object, the cluster minus the last serial clause.

Once it is clear that at least some tagmemes may be suppressed[10] --or shared--in a clause cluster, we want to know the limits of this sharing. Can all peripheral tagmemes, for example, be shared? And if so, in what position do they come in the cluster?

Other variations of clause structure also occur, but I shall postpone discussion of them until §2.2.3 (for tagmeme limits in clause clusters), §2.2.4. (for agreement factors in clause clusters), and §3 (for changes and restrictions caused by discourse structure).

1.4. Clause Distribution

We might well turn, now, from the occurrence of variants of clauses to their distribution without reference to modifications of them. Clause distribution is affected both by limits imposed by the structure of clause clusters, and by limits imposed by the structure of sentences.

Since, however, the distribution of the clause types is relevant both to the description of clauses, and to the description of clause clusters and of sentences (as contributing contrastive characteristics of the higher-level units), we shall defer discussion of clause distribution until we come to these higher units in §§2.1. 2.2.1, 2.2.2. We only emphasize here that no unit is well described until a statement of its distribution is included.

1.5. Some Clause Components of Bobangi (Bantu)

I now wish to show some of the clause types of a Bantu[11] language. The data on Bobangi come from work by Professor Malcolm Guthrie,[12] and are restated in collaboration with Dr. Calvin Rensch. The choice of these data is dictated by the fact that Guthrie's brief study is one of the very few on African languages which explicitly attempts to exploit slot and class relations, and hence can be rephrased in terms which make it possible to compare it with our workshop materials.

Rensch and I suggest a simple matrix, with tagmemic formulas and a citation paradigm accompanying it, to allow one to see a restatement of some basic clause types of Bobangi which have differences in concord requirements when they are independent or embedded. The simple matrix implies a larger matrix--with accompanying specific hypothecated items (marked with asterisk). If these could be shown to be either possible or impossible--by the original author's comment, or by attempted elicitation from an informant--our derivative understanding of the system might be to some degree confirmed or corrected.

Professor Guthrie discusses a general approach to syntax, illustrating it, in part, by data from Bobangi. Even though he makes no attempt to give a complete presentation of the data--it is an 'avowedly incomplete application' of his technique (p. 16)--nevertheless they lend themselves to tentative restatement in terms of tagmemic matrices.

Even the gaps (due to his criteria for selection of somewhat isolated illustrations for an article designed to illustrate theory) are instructive in suggesting questions which an outsider would now like to ask of the author or his informants (whereas a professional scholar of Bantu would probably know these answers). Field investigation can move rapidly only when one can ask questions to test a specific hunch about systemic structure. Wrong hunches are almost as valuable as correct ones--if by their careful checking and repudiation they open the way for revised hypotheses.

The languages discussed by Guthrie in this work each include at least the following general types of sentences (p. 1):

Neutral (Independent; can initiate conversation)
Response
Question
Command
Wish
Dependent, embedded (pp. 13, 16)

Contrasts between Nuclei of Neutral Clauses

Only the first of these--the neutral type--is treated for Bobangi. It divides into transitive and intransitive, and may be modified to become benefactive or causative--see the labels on the left column and top row of Matrix I.

We see that from the simple types--transitive and intransitive--can be derived either benefactive clauses or causative ones. Unanswered, however, is the question whether both benefactive and causative may simultaneously occur.

Only negative samples are given. The positive contrastive forms are unavailable--and therefore the negative signal in the verb complex (which includes the function of ka at the end of the clause) cannot be identified here. Dependent clauses are sometimes embedded within the listed clause types, with a few samples to be discussed below.

Illustrations can now be brought together in a citation paradigm to illustrate the three transitive-intransitive pairs of Matrix I--(words involved are ɛlɛngɛ 'youth', elike-nde '?', olinga 'to like, want', lotomo 'work', ka '?', o-pim-a 'to go out', o-ten-ela 'to cut', mpomba 'elder', njete 'trees', o-kon-isa 'to plant', masangu 'maize'.)

Negative Neutral Clauses	Simple	Benefactive	Causative
Transitive	(1) $\pm_{[c]}S_{ac}$ $+_{[c]}tP$ $\pm O_g$ $+\underline{ka}$	(3) $\pm_{[c]}S_{ac}$ $+_{[c]}btP(\underline{el})$ $+B$ $\pm O_g$ $+\underline{ka}$	(5) $\pm_{[c]}S_{cau}$ $\pm_{[c]}P(\underline{is})$ $+(\pm O_{ac}$ $\pm O_g)$ $+\underline{ka}$
Intransitive	(2) $\pm_{[c]}S_{ac}$ $+_{[c]}iP$ $+\underline{ka}$	*(4) $\pm_{[c]}S_{ac}$ $+_{[c]}biP(\underline{el})$ $+B$ $+\underline{ka}$	(6) $\pm_{[c]}S_{cau}$ $+_{[c]}ciP(\underline{is})$ $\pm O_{ac}$ $+\underline{ka}$

BOBANGI MATRIX I

Negative Neutral Clauses in Bobangi, with contrastive sequences of nuclear tagmemes indicated in the cells.

1. Transitive, Simple:

   ɛlɛngɛ eliki-nde olinga lomoto ka [see (2) pp. 13, 14] 'The youth did not like the work.'

2. Intransitive, simple:

   ɛlɛngɛ eliki-nde opima ka [see (2b) p. 14] 'The youth did not go out.'

3. Transitive benefactive:

   ɛlɛngɛ eliki-nde otenela mpomba njete ka [see (2c) p. 14] 'The youth did not cut down the trees for the elder.'

4. *Intransitive benefactive:

   *(ɛlɛngɛ eliki-nde opimela mpomba ka) [constructed, by analogy, from information from the chart at the bottom of p. 15] *('The youth did not go out for the elder.')

5. Transitive causative:

   mpomba eliki-nde okonisa ɛlɛngɛ masangu ka [see (2d) p. 14] 'The elder did not make the youth plant maize.'

6. Intransitive causative:

   mpomba eliki-nde opimisa ɛlɛngɛ ka [see (2e) p. 15] 'The elder did not make the youth go out.'

Within the cells of Matrix I we have placed symbols (quite different from those of Guthrie) to show the points of structural contrast between clauses:

The transitives differ from the intransitives (a) by a different list of verbs (so far as available illustrations go) in the transitive versus intransitive predicate slot (tP versus iP). In addition (b), the transitive clauses each optionally(±) have a direct object (O_g) which functions semantically as the goal of the action of the main verb (if simple or benefactive) or of the secondary verb (if in a causative clause), whereas the intransitive clauses have no nuclear object functioning as goal of the main verb.

The benefactive clauses differ from the simple ones (a) by the affix content of the verb (-el versus zero) and (b) by the specific obligatory (+) addition of the benefactive tagmeme (B).

The causatives differ from the simple and benefactive clauses (a) by the affix content of the verb (-is versus zero or -el), (b) by addition of the causal role[13] (the causing of someone's action, not the performing of the action itself) in the optional subject slot (S_{cau}) of the clause, and (c) by the transformation of the optional subject-as-actor tagmeme (of the simple and benefactive clauses) into an optional object-as-goal tagmeme.

Concord between Subject and Predicate

Both subject types (S_{ac},S_{cau}) share the requirement that they be marked (by prefixes) as being in concord with the second part of the predicate (not with eliki-nde, but with olinga, for example). It is precisely such concord, plus comparable position preceding predicate, which makes S_{ac} and S_{cau} comprise a formal class of tagmemes. These two tagmemes differ from each other, however, (a) in transform potential, (b) in role relation, and (c) in relation to the permitted occurrence of other tagmemes (e.g., O_{ac}) in the clause. The subscript [c] before $_{[c]}O_{ac}$, and $_{[c]}O_{cau}$, and $_{[c]}tP(el)$, etc., symbolizes the concord requirement. The absence of such a subscript on the tagmemes O_g, O_{ac} and B, specifies that no such concord links them to the predicate. Any concord internal to a phrase would be separately symbolized when the interior structure of the phrase is itself under discussion.

A nominal phrase may fill subject, benefactive, or object slots. We deduce, as a basic formula:

$$+\,_{[c]}\mathrm{Item}_h\colon\left\langle\underline{\mathrm{lotomo}}\right\rangle\pm\,_{[c]}\mathrm{Deictic}\colon\left\langle\underline{\mathrm{lonya}}\right\rangle\pm\,_{[c]}\mathrm{Attributive}\colon\left\langle\underline{\mathrm{losiso}}\right\rangle$$

for lotomo lonya losiso 'that other work' (p. 9).

The plus (+) symbol before the tagmemic slot called Item implies that it is obligatory; the subscript h implies that it is the head of an endocentric phrase. The colon tells us that the class filling the slot is next to be given. The pointed brackets represent the class (presumably here a noun) by a typical member lo-tomo. The deictic lo-nya 'that' and adjective (?) lo-siso 'other' are symbolized as in concord with it. (Contrast the concord of ɛlengɛ esiso 'the other youth' (p. 8).) It is the control of the concord of -siso by lotomo and ɛlengɛ which leads us to treat the latter two as head and the others as modifiers.

The separate modifiers can themselves, however, fill the subject slot without their head. On this basis Guthrie treats all three tagmemes as 'of equal status' (p. 8, fn.), and as not comprising contrastive tagmemes in the internal chain of the nominal phrase. To us, however, the concord requirements, plus difference of role (and--perhaps--the impossibility of arbitrary, meaningless change in the ordering of the three, such as *[losiso lonya lotomo]?) imply the presence of a zero manifestation of a dominating head in subject (or object) slot when the deictic or attributive appear to occur by themselves.

Dependent Clauses within Noun Phrases

Included in a noun phrase, attributive to its head, one may find a dependent (relative) clause. The total phrase serves as filler of an O_g tagmemic slot--and possibly other slots where noun phrases occur. In the following formula note that the verbal element of the dependent clause is in concord with its 'logical object', the preceding noun which is simultaneously head of the noun phrase, but is not in concord with the nominal following it (with no other tagmeme allowed between) as its logical subject:

$$[\ +\ _{[c]}\mathrm{Item}_{hNP|_{g}}\quad \pm\ (\ +_{[c]}\mathrm{dtP}\ \ +\ \mathrm{dS})]$$

Compare lotomo lolakisi moninga (p. 9) 'work-showed-friend' i.e., 'work which his friend showed him.' Note that the formula shows the Item-as-goal is in concord with the dependent transitive predicate but not--in contrast with independent clauses--with the (dependent) subject. It is the goal item which determines the concord prefix of the dependent verb (p. 16). Note, further, that the Item tagmeme is simultaneously serving in two roles--one as head of the noun phrase, and one as goal of the dependent verb; the vertical stroke in the subscript after Item symbolizes this double tagmemic function.

The entire noun phrase, however, serves as filler of the goal slot of the main clause, in the sentence: ɛlɛngɛ eliki-nde olinga$[O_g:NP_{rel}]$ (lotomo lolakisi moninga) ka (see [4], p. 7) 'The youth did not like the work his friend showed him.' Here we have placed $[O_g:NP_{rel}]$ outside the parentheses to show that the role of goal has a function on two levels at once--on the level of independent clause, and separately but simultaneously with the included relative dependent clause. Note further, as indicated by the phrase formula and made explicit by Guthrie (p. 9) that the dP and dS are mutually obligatory (+...+...), but that the presence of the combination with its noun head is optional (±[+... +...])--but may not occur without that noun head ($+\mathrm{Item}_{hNP}$). (The ±[+... +...] section, apart from the preceding noun which is its simultaneous head and goal, is called by Guthrie an F clause.)

A second type of dependent clause (Guthrie's type K) may also fill the O_g tagmemic slot in an independent clause. Here, again, a noun may--but is not required--to precede the included verbal element as its object:

$$\pm\ [+O_g\ +dP_2]$$

This modal nomino-verbal phrase (for terms, see p. 16) differs from the noun phrase with attributive relative clause, in that this second dependent clause type (a) has an included predicate which is not in concord with its preceding object and (b) hence differs at least this much in internal structure from the relative predicate; (c) has its goal optional, so that the predicate may be itself fill the object slot of the independent clause; (d) is not accompanied by a dependent subject; (e) may not, in its form containing the object, fill the subject slot of an independent clause. For this dependent clause in context, note:

ɛlɛnge eliki-nde olinga $O_g:NP_{nom\text{-}vb}$ = (lotomo bomeki) ka (see [6], p.7)
'The youth did not want to try [to] work'

Allo-Forms--Variants--of the Independent Clause

From the examples provided us, the meaning of neither eliki-nde nor of ka can be determined. We assume that eliki-nde has some temporal significance, however, since we are told (p. 13) that if it is omitted, the sentence as a whole refers to the'time implied in the context'--but that in such an instance the subject is obligatory, not optional as shown in Matrix I. If these interpretations of the article happen to be correct, then as an allo-construction of the independent simple transitive clause (1) we have:

$$(1) \sim [\,+ S_{ac} - \text{Time} + tP_3 \pm O_g + \underline{ka}]$$

in which tP_3 is tP of (1) minus the temporal element mentioned. This conclusion is cast in doubt, however, by other data regarding temporal elements which lead to expansion variants of (1). Preceding S_{ac} in (1) we optionally find nambisa 'afterwards' (p. 12) as a Time tagmeme--or, instead, it may follow the O_g, and in turn be followed by an Instrument-Cause tagmeme, e.g., by naepamba 'with a knife' or (same tagmeme?) by naewala-embula 'because of the rain.' The implication for a more complete formula for the independent simple transitive is then:

$$[\pm T \pm_{[c]} S_{ac} \pm_{[c]} tP \pm O_g \pm \text{Inst} + \underline{ka}] \sim [\pm_{[c]} S_{ac} +_{[c]} tP \pm O_g \pm \text{Inst} + \underline{ka}]$$

Some Unanswered Questions

Even a study as brief as Guthrie's allows for an initial understanding of first approximations towards many basic components of a system--and suggests hypotheses for checking not only with informants in the same language, but with other closely related languages.

Some of these questions we now list:

1. Can further subdivisions of nominal phrases, or of dependent clauses, be found which can fill subject and object slots?

2. What is the explicit set of restrictions on all slots of an independent clause when it is transformed to one of the dependent clause types?

3. Can every clause type of Matrix I be transformed into a relative or into a modal dependent clause? If so, what is the total dependent matrix of clauses?

4. Do all clause types of the independent matrix have variants, like the first type, in which subject is obligatory if the pre-predicate temporal is omitted?

5. Is this an isolated kind of variant, or one of a pattern of variants in which deletion of other clause tagmemes is permitted if the behavioral context--or the dialogue context--specifies it?

6. Are such variants part of a set discourse--conditioned variants which would include reference to discourse-initiating (p. 1) versus non-initiating clause types or variants?

7. What other clause types or tagmemes need to be added to expand the matrix? (Note, for Kongo--a related language--data, later in the article: numerals in noun phrases, certain particles, special word orders (p. 17); restrictions by special lexical lists of stems, special clause complements implying indirect object, location, possession (p. 18); copula in concord with following element (p. 19); subject nomino-verbals requiring same stem morpheme as main verb; emphatic versus nonemphatic orders of tagmemes, double concord--with preceding and with following elements (p. 20); non-clause linked by hiatus with clauses--differing as to whether the pre-hiatus item does or does not have the same referent as a potential subject of the post-hiatus element, tagmeme order variants conditioned by deleted tagmemes (p. 21); parenthetic--non-concording--dependent clauses, expanded nominals, quoted questions embedded in relative clauses (p. 22); clause restrictions with copulas (pp. 23-24); equational clauses with a variety of contrasting [independent-marked versus dependent-unmarked] nominal predicates [which control concord with the accompanying nominals], with contrasting orders for emphasis (pp. 25-26).)

8. Must a desiderative clause type be set up in contrast with all those of Matrix I--inasmuch as olinga 'want' contrasts with okela 'do' and opima 'go' (p. 14)?--or is this possibility already covered by handling 'want' as a main verb, with modal dependent clause as its object (see [6], p. 7--and see discussion of dependent clauses above.

9. Can causative and benefactive be combined in the same sentence? If so, how does this modify Matrix I, both as to general possibilities of sentence types, and as to order of tagmemes within them? And can desideratives be added to such hypothetical combinations, whether to main or dependent verb, or both?

Stated in terms for checking with an informant, for example, we are curious to know how many--if any--of the following sentences are possible--or possible with change of order; or how comparable semantic components are handled where these forms are incorrect:

(The asterisk before the parentheses means, here, that we have invented these sentences. Their *tentative* justification or rejection can be obtained by informant elicitation. *Firm* judgment, however, must rest upon finding analogous sentences in running text. This checking is comparable to the standard checking, against uncontrolled text, of morphological paradigms--but is more essential for syntactic material since biased word order in sentences is more likely to be introduced by elicitation or by translation than is biased morpheme order, or occurrence, within words.)

a. *(ɛlɛnge eliki-nde opimela mpomba ka) 'The youth did not go out for the elder'

b. *(ɛlɛngɛ eliki-nde opima bomaki ka) 'The youth did not go out to try'

c. *(ɛlɛngɛ eliki-nde olinga opima ka) 'The youth did not want to try'

d. *(ɛlɛngɛ eliki-nde olinga otenela mpomba njete ka) 'The youth did not want to cut down the trees for the elder'

e. *(ɛlɛngɛ eliki-nde olinga opimela mpomba ka) 'The youth did not want to go out for the elder'

f. *(mpomba eliki-nde olinga okonisa ɛlɛngɛ masangu ka) 'The elder did not want to make the youth plant maize'

g. *(mpomba eliki-nde olinga opimisa ɛlɛngɛ ka) 'The elder did not want to make the youth go out'

h. *(mpomba eliki-nde okonisa olingisa ɛlɛngɛ masangu ka) 'The elder did not make the youth want to plant maize'

i. *(mpomba eliki-nde olingisa opimisa ɛlɛngɛ) 'The elder did not make the youth want to go out'

j. *(mpomba eliki-nde opimisa ɛlɛngɛ olingisa) 'The elder did not make the youth go out, wanting to'

k. *(mpomba eliki-nde olinga opimisa bomaki ɛlɛngɛ ka) 'The elder did not want to make the youth try to plant'

l. *(mpomba eliki-nde olinga ɛlɛngɛ okonisa olingisa masangu ka) 'The elder did not want to make the youth want to plant maize'

In comparing, now, this Bantu material with Niger-Congo languages studied in West Africa, I would point out the Bobangi benefactive and causative components in the verb, which lead to clause structures quite different from those reported for--say--Vagala and Dagaari (of Ghana) or Mbembe (of Nigeria). The Bariba (of Dahomey) comes closer, typologically, to the Bobangi in this respect, with benefactive and causative suffixes.

1.6. Some Clause Components of Hausa (Chad, Afroasiatic)

Miss Gisela Kappler has attempted to abstract some of the data needed for our particular typological interests from Abraham[14] and to restate it in a format which would facilitate our comparisons.

Based on Kappler's formulas, as applied to Abraham's illustrations (except where otherwise stated) but with numerous uncertainties, incomplete statements, and--perhaps--errors, we see the following clause positions and filler alternatives:

Intransitive Clause (with marginal tagmemes in parentheses):

(± Time)	$\pm_{[c]}$Subj	+ $_{[c]}$Pred$_{intr}$	(±Instr.	± Modal	± Loc)
NounPh.	NPh	IntrVPh	PrepNPh	$_{m}$NPh	LocN
TempPrep NPh		Asp Pr	PrepPr$_{ind}$	Prep NPh	LocNPh
					LocPrepNPh

Here the initial optional temporal tagmeme (with noun phrase, or noun phrase preceded by preposition and temporal marker), may alternatively come at the end of the clause (with same fillers, or with a temporal particle).

The independent subject tagmeme is in concord with the predicate personal-aspect pronoun of the predicate verbal phrase, agreeing with the pronoun as to person, number, and gender.

The predicate tagmeme is composed of the verb proper (which in part determined the basic clause type--e.g., intransitive, transitive) preceded by the person-aspect pronoun which carries the remaining functions of person (number, gender, aspect), or is composed of the aspect-pronoun by itself.

The instrumental slot is filled by prepositional noun phrase, or preposition with independent pronoun. This tagmeme may optionally occur in other positions--such as following the locative.

The modal tagmeme may be manifested by a modal noun or noun phrase, with or without certain prepositions.

The locative slot may be filled by noun, noun phrase, or prepositional noun phrase, marked for locative function. The modal and locative tagmemes may come in reverse order in respect to each other.

ná· zó· (Predicate containing aspect-pronoun and verb)
'I-have come'

yá· zó· dà rá·ná· (with temporal prepositional noun phrase in
'He-has come by day' final position)

ìyá·lìn she·hù sún sàuká lá·fíyà· (with modal noun final; ex-
'Family-of Shehu they-have arrived well-being' ample from Hodge)

dán zákì yá shìgá cíkín búkkà (with locative phrase final; ex-
'young lion he-has entered inside-of hut' ample from Kraft)

kàn bíyú· mâ· gámà (with initial temporal prepositional noun
'at two we-shall finish' phrase)

Transitive clause (nuclear tagmemes, only, shown here; marginal tagmemes in some degree similar to intransitive):

$$\begin{array}{llll}
\pm\ {}_{[c]}S & +{}_{[c]}P_{tr} & \pm\ IO & \pm\ O \\
NPh & {}_{tr}VPh & {}_{io}NPh & NPh \\
 & & {}_{io}Pr & {}_{o}Pr_{dep}
\end{array}$$

Subject agrees with predicate, as it does for intransitive; predicate slot has transitive-verb filler (or, as an alloconstruction, verbal noun with other co-occurrent restrictions).

Indirect object (=benefactive) tagmemic slot is filled by a marked noun phrase, or by an indirect-object pronoun. The direct-object slot is filled by (noun or) noun phrase, or by a dependent object pronoun:

yá· gáyà· mátà sà·kôn dà dàré
'He-has told to-her [a]message at night' (with indirect object 'her', direct object 'message'; example from Hodge)

ná· hàrbé· shì dà bíndígà
'I-have shot him with gun' (with dependent object pronoun, followed by instrumental)

Transitive-Alternate 1:

$$\begin{array}{llll} \pm[c]^{S} & +[c]^{P}\ tr\text{-}1 & \pm IO & +O \\ & {}_{tr}VPh\text{-}1 & & PrepNPh \\ & & & PrepPr_{ind} \end{array}$$

One alternative for transitive requires that certain verb phrases (${}_{tr}VPh\text{-}1$) be accompanied obligatorily by a direct object tagmeme marked by a preposition:

ná· ràbú dà ítá (with marked independent pronoun)
'I-have left (prep) her'

yánà· rìqé dà má·shì
'He-is holding (prep) [a] spear'

Transitive-Alternate 2:

$$\begin{array}{lll} \pm[c]^{S} & +[c]^{P}tr\text{-}2 & +O \\ & {}_{tr}VPh\text{-}2 & {}_{io}NPh \\ & & {}_{io}Pr \end{array}$$

A second alternative for transitive requires that certain verb phrases (VP-2) be unaccompanied by indirect object, but obligatorily accompanied by direct object with fillers of that form which would--in the basic transitive type--be indirect object:

yá· cím mà zá·kì
'He-has encountered lion'

zá·kì yá· tá·sám másà
'[A] lion he-has suddenly-attacked him'
(Note ma in 'him'.)

Ditransitive Clause (nuclear tagmemes):

$$\begin{array}{llllclll} \pm{}_{[c]}\mathrm{S} & +{}_{[c]}\mathrm{P}_{ditr} & +(\pm \mathrm{O}_{anim} & \pm \mathrm{O}) & \sim & \pm{}_{[c]}\mathrm{S} & +{}_{[c]}\mathrm{P}_{ditr} & +\mathrm{O} \\ & \mathrm{ditr}^{VPh} & \mathrm{N}_{anim} & \mathrm{N} & & & & \mathrm{Pr.}_{dep} \\ & & \mathrm{Pr.}_{dep} & \mathrm{NPh} & & & & \\ & & \mathrm{Vb.N} & \mathrm{Pr.}_{indep} & & & & \end{array}$$

Here Kappler sets up a clause type with a further contrastive verb-stem list (accompanied, as above, by a preceding aspect-pronoun in the verb phrase), along with special object co-occurrence restrictions. At least one of two objects must follow the verb of the two types, the first requires an animate noun (or a dependent pronoun, or a verbal noun?), the second has noun or noun phrase, independent pronoun (varying to dependent pronoun if it directly follows the verb), or verbal noun (?):

ná· bá· shì ítá
'I-have given him it'
bàucí· tó· fé kánò gírmá
'Bauci she exceeds Kano as to size'

Under some circumstances a particle dà or shé· comes between predicate and animate first object:

ná· shá·-shé· shì rúwá·
'I-have given-particle him water'

Some clauses may lack a normal verb predicate. A verbal noun phrase (including its object) may be followed optionally by an aspect-pronoun (in agreement with the object of the verbal noun) and obligatory prepositional phrase as modal complement:

dí·bár músù rúwá· yánà· dà wùyá·
drawing of for-them water it-being with difficulty
'It is difficult to draw water for them'

An equational clause:

$$\begin{array}{lll} +{}_{[c]}\mathrm{Subj} & \pm \mathrm{Descrip.} & +{}_{[c\text{-}g]}\mathrm{Pred}_{equa} \\ \mathrm{NPh} & \mathrm{NPh} & \\ \mathrm{Pr}_{ind} & \mathrm{Pr}_{poss} & \end{array}$$

Here the descriptive tagmeme may come on either side of the predicate (though shown only preceding it, in the alloconstruction given--with possessive pronoun observed in the pre-predicate position but not--in Kappler's formula--

post-predicate); the descriptive noun is often translated by English adjective (see Hodge). Predicate has concord with subject (or sometimes descriptive substantive?) limited to gender; otherwise these equative verbs do not change in form--except that their verb tones differ according to the tone of the preceding noun:

màcè cé
woman is
jà˙kín nàn qàqánè né˙
donkey this small is
yâ·rá nè˙ dó˙gwà˙yé˙ dà sú·
boys are tall with them
'The boys are very tall'

Clauses related to these include information questions (with added particle, and with clause-final falling tone), yes-or-no questions (differing from affirmation by clause-final tone changed to falling), commands (with special verb forms--including tone and length under certain circumstances):

kúdí· náwà nê·
money how-much is (-it)?
yá· sà·mí jà·kî
did-he get donkey?
dó·kì nê˙
horse is?

The negative involves striking changes--differences large enough to lead Kappler to treat them as types emically different from their corresponding affirmatives. For (the various kinds of) transitive and intransitive statements, the negative tagmeme is discontinuous ba...bá, with the first part preceding the verb phrase, which in turn begins with special aspect-pronoun elements, which, then, determine the tone and length of the negative element preceding them. In equational clauses, the first ba precedes the subject tagmeme. The second bá usually comes at the end of the various clauses (but is absent from clauses with progressive aspect). Command clauses use kádà instead of ba...bá:

kwá·ná· úkù bàn gán shī bá
days three not-have-I seen him not
kádà kà sáyár
don't you sell-it!

From this preliminary sample, inadequate though it may be, several likenesses and differences are seen between the (Afroasiatic) Hausa and the Niger-Congo languages of West Africa.

As for likeness, both have a quite similar order of tagmemes in transitive clauses (e.g., subject, predicate, indirect object, direct object, manner, location, time (see the Vagala, above). Both have intransitive, transitive, ditransitive and equative types--though this list of possibilities may be due as much to some degree of universal[15] constraints on human nature and language communication as to any other factor.

The complexity of the negative clause in its relation to the affirmative is an interesting typological parallel.

On the other hand, some striking differences appear: (1) The Hausa seems to have a much wider variety of transitive subtypes, with co-occurrence relations between a selected set of verbs and the manifesting forms of indirect and direct object. (2) Hausa has an instrumental tagmeme in its basic transitive clause. This would lessen the need for some of the special kinds--or frequency of use--of serial verbs which are so characteristic of the West African Niger-Congo languages. (3) Hausa allows two pronouns in sequence, in object positions; the lack of this freedom leads, in Niger-Congo types such as Twi, to further forced serial constructions. (4) The obligatory, intricate aspect-pronoun complex[16] of the Hausa verb phrase is quite different from the usual simple verb (with pronominal prefix and tone changes) of many of the Niger-Congo languages.

FOOTNOTES

[1] Based, of course, on our limited sample--a restriction which we shall not repeat each time, but which may lead to modifications later. The Niger-Congo languages of Ghana and Nigeria which we refer to as our primary sources for clause data are largely Baraba, Dagaari, Kasem, Vagala, Degema, Igede, Mbembe--and, from secondary sources, Twi.

[2] In an article entitled 'Some Restrictions on Objects in Twi,' Journal of African Languages, 2.145-49 (1963).

[3] For Twi, cf. Stewart, op. cit. p. 149: ' "come, bring, send" ...can be either intransitive or transitive, but which paradoxically never have a direct object even when transitive.'

[4] Imperfective is derived from perfective by a set of rules, phonologically conditioned, involving added vowel length, sometimes with r or n, and with vowel harmony.

[5] See his Grammar Discovery Procedures (The Hague: Mouton and Co.) 1964. Note some restrictions--such as in reference to concord, or agreement, where two differences do not seem to justify an emic contrast. For concord restrictions, see K. L. Pike 'Dimensions of Grammatical Constructions,' Language, 38.221-44, 1962.

[6] In morphology, Etung has concord systems reminiscent of the more extensive Bantu concord. We shall in §1.5 turn to published Bantu data to show some syntactic characteristics--which in part are more like the Bariba of Dahomey than the Dagaari or Vagala of Ghana, or even the Mbembe of Nigeria.

[7] I have been encouraged, in dealing with the distribution of clause variants, by recent descriptive approaches by Robert Longacre used in dealing with Trique (Mexico) clauses, "Trique Clause and Sentence: A Study in Contrast, Variation and Distribution," IJAL, 32. 242-52 (1966).

[8] For semantic linkages of subclusters, see §§2.2.5., 1.1.1.

[9] Op. cit.

[10] A detailed description of some of these phenomena from a transformationalist viewpoint (but without the attempt of studying emic--vs. etic--differences) is seen in Kay Williamson, A Grammar of the Kolokuma Dialect of Ịjọ, West African Language Monographs 2 (Cambridge: The University Press) 1965.

[11] Greenberg's classification--not accepted by all scholars--places Bantu in his section IA5D, which implies that Bantu is more closely related to Etung than to any other language within the direct purview of this report.

[12] Bantu Sentence Structure, School of Oriental and African Studies, University of London, 1961. Page references refer to this article. Preceding the page numbers, the numbers in parentheses refer to his numbered sentences on those pages.

[13] Our use of role, here, is related to Guthrie's mention of 'logical subject' and 'object' in fn. 1, p. 16. Our use of labels--rather than Guthrie's letters and Roman numerals--for tagmemes and tagmemic slots allows the reader easier insight into the relations involved. Guthrie's work, however, is valuable in another fashion, in demonstrating the distributional validity of groups and sequences, by using formal labels which lack semantic overtones.

[14] R. C. Abraham, The Language of the Hausa People (London, 1959). She uses some supplementary samples for C. T. Hodge, An Outline of Hausa Grammar, Language Dissertation, #23 (1947); and Hodge and I. Umara, Hausa, Basic Course (Washington, 1963); C. H. Kraft, op. cit. A Study of Hausa Syntax, Vol. 1-3, Hartford Studies in Linguistics 8-10 (1963).

[15] Precisely here is one need for wider sampling of languages--a sampling forwarded a bit by this report. Once a large enough sample is available, more certain generalizations can be made.

[16] See chapter 5 for this data.

CHAPTER II: CLAUSE CLUSTERS IN SENTENCES

Investigations of the workshop dealt only briefly with materials concerning the sentence level as such. Studies concentrated more on clause materials, and clauses in (less-than-sentence) clusters. Nevertheless, the study of sentences proved useful. On the one hand it was needed to separate clauses and clause clusters from larger structures, and, reciprocally, it was essential for differentiating emic paragraphs and discourse from smaller units. The sentence proved to be relevant as the distributional setting for clauses, but in sequence certain sentence structures comprised paragraphs.

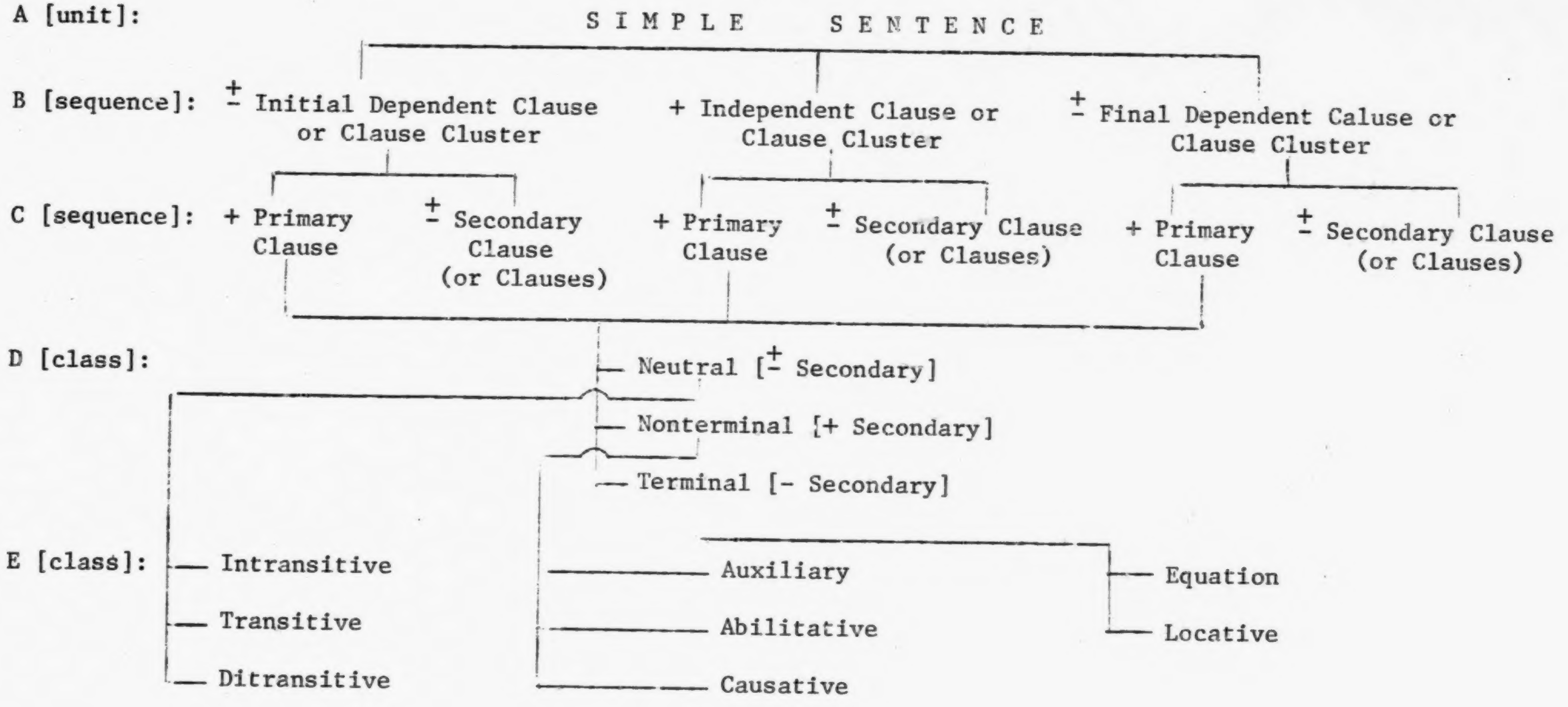
2.1. The Sentence as Setting for Clause Distribution

Crucial observations about Kasem sentence structure were supplied to the members of the workshop by Dr. John Callow and Mrs. Kathleen Callow. From their data, the accompanying Kasem chart may be constructed. In Kasem Chart 1, Row A lists the simple sentence as itself a unit as a whole. Row B shows the important included structural sequence of optional dependent clause (or clause cluster), then the obligatory nucleus of the sentence, which is an independent clause (or clause cluster), and last the final, optional, dependent clause (or clause cluster).

Row C shows the gross potential internal sequence with each of the slots of Row B. Each slot of the simple sentence may be filled by a sequence of clauses--a clause cluster. The first member of the cluster (whether the cluster as a whole is dependent or independent in relation to the sentence as a whole) begins with a primary clause (the nucleus of the cluster, as over against the higher-level nucleus of the sentence), and is followed (with certain restrictions to be discussed in §2.2) by one or more secondary (serial) clauses.

The three elements of Row B are differentiated from each other not only by their place and function in the sequence within the sentence (i.e., by their external distribution), but also by their internal structure. For the latter, see Kasem Chart 2, where NP, VP are nominal (or pronominal) and verb phrase: subscript r implies 'realized' aspect, such that $VP_r = \pm$ wù/bā/tà + V_{nf}, in which the verb is n(on)f(uture): subscript nr implies 'n(on)r(ealized)' aspect, with $VP_{nr} + VP_f/VP_s/VP_{ip}$, in which, in turn, $VP_s = \pm$ mā/māà/tà + V_f, and V_f is f(uture) verb: and $VP_{ip} = \pm$ yí $\pm$ tà + V_{ip}, with V_{ip} as i(m)p(erative) verb.

Kasem Chart 1


A [unit]:
S I M P L E S E N T E N C E
B [sequence]:
± Initial Dependent Clause or Clause Cluster
+ Independent Clause or Clause Cluster
± Final Dependent Caluse or Clause Cluster
C [sequence]:
+ Primary Clause
± Secondary Clause (or Clauses)
+ Primary Clause
± Secondary Clause (or Clauses)
+ Primary Clause
± Secondary Clause (or Clauses)
D [class]:
Neutral [± Secondary]
Nonterminal [+ Secondary]
Terminal [- Secondary]
E [class]:
Intransitive
Transitive
Ditransitive
Auxiliary
Abilitative
Causative
Equation
Locative

Kasem Chart 2

CONTRASTIVE NUCLEAR STRUCTURE OF PRIMARY CLAUSES

Initial			
Dependent	+ S:NP	+ nà...tú/nā	+ Pred: $VP_{r/nr}$
Independent	+. S:NP		+ Pred:$VP_{r/nr}$
Final			
Dependent	+sī/pá +S:NP		+ Pred:VP_{nr}

Note, therefore, that these clauses differ internally by special particles, and by the range of tense and mood which is allowed in the verb phrase. Contrasts between the primary clauses of Row C of Chart 1, that is, are differentiating features of elements of Row B.

2.2. Clause Clusters (Serial Clauses)

When, however, our focus shifts to the clause clusters themselves, we are interested in the relationships between the primary and secondary clauses which respectively comprise the nuclei and the serial members (or margins) of the clusters. Row D of Kasem Chart 1 shows some of the constraints on this relation.

2.2.1. General Restrictions on Sequence Types in Clusters

Specifically, certain Kasem clauses (shown in Row E of Kasem Chart 1 to be the equative and locative clauses) cannot be followed by a secondary, serial clause when they themselves are the nucleus of the cluster (i.e., when they are primary). This set, therefore, is by the Callows called terminal, in relation to the cluster. On the contrary, however, nonterminal primary clauses are required to have a secondary clause (or clauses) following them. This set, seen in Row E, is made up of a special set of auxiliary, abilitative and causative clauses. The other type is neutral in respect to this requirement: it may be followed by a secondary clause, or it may itself close the cluster. Neutral clauses, as a class, include intransitives, transitives, and ditransitives.

These observations concerning primary clauses apply, whether in reference to the independent clauses of Row B, or the dependent[1] ones.

The Callows demonstrate that the members of the neutral, nonterminal and terminal primary clause sets differ not only by their contrastive distribution in relation to the occurrence or non-occurrence of secondary clauses with them, but also in relation to their internal structures. Members of the first set, the neutral one, have internal differences in relation to object (intransitive, none; transitive, optional object; ditransitive, obligatory occurrence of either of two objects, or both of them), and by different verb stems. The nonterminal set likewise differs in terms of stems (auxiliary, with fourteen verbs such as dàari 'to do next', kwǎani 'to do with effort and succeed', kōwri 'to continue doing'; abilitative, two verbs, wǎni 'to be able', and wǎri 'to be unable'; causative pā 'to give'), but differs also in that no added object, complement, or related marginal tagmemes are allowed. The terminal clauses, on the other hand, have special complements or margins as well as stem differences (equational, with nominal or adjectival complement; locational verb with a locational marginal tagmeme as well).

Note that one might have expected here a description in which the auxiliary verbs were treated as auxiliaries to the main verb, and in the same verb phrase with them. This is the analysis implied in much of our work in §1.

There is a difference in Kasem, however. Here the auxiliary has its subject, and the semantically main verb also has its own subject, making it simpler for the Callows to treat the subject-auxiliary combination as a clause in its own right. In order for the reader to see this facet of the structure, we add a partial syntactic paradigm. Verbs here were chosen by the Callows to demonstrate the differences between clauses. Perfect aspect is used when possible (not possible in nonfuture equative and locative, for example).

Kasem, Nonfuture, Independent Clauses:

Intrans.	ò kyúwga	'he jumped down'
Trans.	ò nyògi ná	'he drank water'
Ditrans.	ò bīri nī sǒngo kúm	'he showed me the house'
Auxil.	ò kwǎani ō kyúw	'he jumped down with an effort'
Abil.	ò wǎni ō kyúw	'he was able to jump down'
Caus.	ò pē ō kyúw	'he made him jump down'
Equat.	ò yī bābīa	'he is/was brave'
Locat.	ò wū sǒngo nī	'he is/was in the house'

Kasem, Future Independent Clauses:

Intrans.	ò wú kyúw	'he will jump down'
Trans.	ò wú nyò ná	'he will drink water'
Ditrans.	ò wú bīri nī sǒngo kúm	'he will show me the house'
Auxil.	ò wú kwǎani ō kyúw	'he will jump down with an effort'
Abil.	ò wú wǎni ō kyúw	'he will be able to jump down'
Caus.	ò wú pā ō kyúw	'he will make him jump down'
Equat.	ò wú tà yī bābīa	'he will be brave'
Locat.	ò wú tà wī sŏngo nī	'he will be in the house'

Kasem, Consecutive Independent Clauses:

Intrans.	ō mā kyúw	'and he jumped down'
Trans.	ō mā nyò ná	'and he drank water'
Ditrans.	ō mā bīri nī sǒngo kúm	'and he showed me the house'
Auxil.	ō mā kwǎani ō kyúw	'and he jumped down with an effort'
Abil.	ō mā wǎni ō kyúw	'and he was able to jump down'
Caus.	ō mā pā ō kyúw	'and he made him jump down'
Equat.	ō māà yī bābīa	'and he was brave'
Locat.	ō māà wū sǒngo nī	'and he was in the house'

Kasem, Imperative Independent Clauses:

Intrans.	ò kyúw	'he should jump down'
Trans.	ò nyò ná	'he should drink water'
Ditrans.	ò bīri nī sǒngo kúm	'he should show me the house'
Auxil.	ò kwǎani ō kyúw	'he should make an effort to jump down'
Abil.	---	
Caus.	ò pā ō kyúw	'he should make him jump down'
Equat.	ò tà yī bābīa	'he should be brave'
Locat.	ò tà wū sǒngo nī	'he should remain in the house'

Kasem, Initial Dependent Clauses:

Intrans.	ò nà kyúwgi tú...	'when he jumped down...'
Trans.	ò nà nyògi ná tú...	'when he had drunk some water...'
Ditrans.	ò nà bīri nī sǒngo kúm tú...	'when he had showed me the house'
Auxil.	ò nà kwǎani ō kyúw tú...	'when he had jumped down with an effort'

Abii.	ò nà wǎni ō kyúw tú...	'when he had been able to jump down'
Caus.	ò nà pē ō kyúw tú...	'when he had made him jump down'
Equat.	ò nà yī bābīa tú...	'as he is brave...'
Locat.	ò nà wū sǒngo nī tú...	'when he was in the house...'

Kasem, Final Dependent Clauses:

Intrans.	...sī ō kyúw	'to jump down'
Trans.	...sī ō nyò ná	'to drink water'
Ditrans.	...sī ō bīri nī sǒngo kúm	'to show me the house'
Auxil.	...sī ō kwǎani ō kyúw	'to make an effort to jump down'
Abil.	...sī ō wǎni ō kyúw	'to be able to jump down'
Caus.	...sī ō pā ō kyúw	'to make him jump down'
Equat.	...sī ō tà yī bābīa	'to be brave'
Locat.	...sī ō tà wū sǒngo nī	'to remain in the house'

2.2.2. Specific Restrictions on Sequence Types in Clusters

Studies were started to specify in more detail the particular clause types from language to language which might be primary or secondary--or tertiary, etc.--in the clusters.

Jacobs, for Bimoba, prepared for me a co-occurrence matrix, with clause types listed at the left, and the same types along the top. If the clause in a column could follow a clause indicated by a row, a check was put in the cell at the intersection. Preliminary results--see accompanying Bimoba Matrix--showed: (1) That neither introducer nor stative clauses could occur as the first of a cluster (note that all cells are empty in fifth and sixth rows but not in fifth and sixth columns). (2) The stative clause could not follow a demonstrative clause, (3) nor could an equative follow itself. (4) Impersonal clause (which I have added to the chart because of her written data accompanying it) never entered into a cluster at all (except in certain adverbial uses), either as first or as second member--see empty cells in last row and column.

Co-Occurrence Matrix of Bimoba Clauses in Clusters

Secondary Clause	Intrans.$_2$	Trans.$_2$	Ditrans.$_2$	Equat.$_2$	Introducer$_2$	Stat.$_2$	Impers.$_2$
Primary Clause							
Intransitive$_1$	x	x	x	x	x	x	-
Transitive$_1$	x	x	x	x	x	x	-
Ditransitive$_1$	x	x	x	x	x	-	-
Equative$_1$	x	x	x	-	x	x	-
Introducer$_1$	-	-	-	-	-	-	-
Stative$_1$	-	-	-	-	-	-	-
Impersonal$_1$	-	-	-	-	-	-	-

In addition, Jacobs specified a number of general considerations relating to clause clusters: (1) When the cluster threatened to become too long (exact length not specified), with too many clauses in it, it would be broken into two. (2) If spoken so slowly that two breath groups were involved, the series would be broken into two clusters. (3) If any one verb were accompanied by too many phrases, the containing clause was not followed by further members of a cluster. (4) Some clauses--e.g., impersonal, with the exception of the adverbial uses suggested above--never entered any clusters.

On the other hand, fast speech, especially when there was shared object (plus shared subject), often led to joining clauses in a cluster. Similarly, when two verbs seemed to be involved in representing a single action, these also were often built into a unit cluster (see instrumental in §1.1.1 and see §2.2.3).

Kennedy, meanwhile, had been developing his description of Dagaari clauses with special reference to their contrast, variation, and distribution. For the latter, he likewise prepared a matrix showing co-occurrence restrictions on clause distribution within clusters. His preliminary matrix--which see[2]--indicated a regularity and lack of restriction for intransitive, transitive, ditransitive, locative, stative, and descriptive. Each could be first in a cluster and each could be second. The demonstrative, on the other hand, did not appear in either position, in series with these others.[3]

Co-Occurrence Matrix of Dagaari Clauses in Clusters

Secondary Clause: / Primary Clause:	Intran.	Trans.	Ditr.	Loc.	Stat.	Des.	Dem.
Intransitive	x	x	x	x	x	x	-
Transitive	x	x	x	x	x	x	-
Ditransitive	x	x	x	x	x	x	-
Locative	x	x	x	x	x	x	-
Stative	x	x	x	x	x	x	-
Descriptive	x	x	x	x	x	x	-
Demonstrative	-	-	-	-	-	-	-

A much more extensive study of distribution of clauses in clusters is now underway by Kathleen Callow, with two developments beyond the work of Jacobs and Kennedy: (1) She adds to a Kasem matrix those clause types which are non-terminal (see reference to material in §2.2.1 above), and certain others which--perhaps--are derived. (2) She is obtaining from Jacobs and Kennedy similarly-arranged extended matrices, going beyond their early work in Bimoba and Dagaari, and is thereby able to make comparison of important likenesses and differences between the three of them. (Kasem, for example, has much less freedom of occurrence of clause types--only intransitive, transitive, ditransitive occur reciprocally in both first and second positions--than does Dagaari.)

2.2.3. Restrictions on Tagmemes within Clause Clusters

In §1.3.7 we saw that for most[4] of the languages of West Africa the subject of the second (or third, etc.) clause must be deleted when it is the first subject of the first clause of a cluster. A repeated object in a clause cluster is also deleted (or the two clauses of the sequence may be said to share the retained subject or object).

Once this phenomenon was clearly in view, I wanted to know what happened to other tagmemes of the second clause of a cluster. What would happen to the tagmemes of location, time, degree, manner, when these (like subject or object) were the same in two clauses?

For this purpose, our most useful set of illustrations came from R. Bergman's work on Igede.

First we give a set to show the sharing of cluster-initial subject and cluster-medial object (or, alternatively stated, deletion of like-subject and like-object from second clause):

àhÌ hû ólō
we take load
plus àhÌ chʊ̄ ólō
we put-on-head load
yields àhÌ hû ólō chʊ̄
we take load put-on-head

Next we show that a locative peripheral tagmeme, shared by both clauses of a cluster, occurs at the end of the cluster rather than--like object--at the end of the first clause (or, one may say, the first of two like locatives is deleted).

àhÌ hû ólō í-îhî
we take load in-market
àhÌ chʊ̄ ólō í-îhî
we put-on-head load in-market
àhÌ hû ólō chʊ̄ í-îhî
we take load put-on-head in-market

The time tagmeme acts like the locative:

àhÌ hû ólō âlɛ́
we take load to-day
àhÌ chʊ̄ ólō âlɛ́
we put-on-head load today
àhÌ hû ólō chʊ̄ âlɛ́
we take load put-on-head today

The manner tagmeme acts similarly:

àhÌ hû ólō ÍnyÍnyÌ
we take load similarly
àhÌ chʊ̄ ólō ÍnyÍnyÌ
we put-on-head load similarly
àhÌ hû ólō chʊ̄ ÍnyÍnyÌ
we take load put-on-head similarly

Compare an "adverbial" modifier:

àhÌ hû ólō wúù
we take load all
àhÌ chʊ̄ ólō wúù
we put-on-head load all
àhÌ hû ólō chʊ̄ wúù
we take load put-on-head all

Compare, also, the onomatopoeic adverb ("ideophone"):

òhè chÎ átɛ̄ hɔ̄ wíríwírí
sky cut drops do (of sprinkling)
'It was sprinkling'

Similarly, note the cluster-final place of an aspect particle:

S Aux Pred Do Pred Do Pred Do Asp
ɔ̄ kā dā ɔ̄mū hû âŋ bû ɛ̄pwā lɛ̀
he will do start take thing to be house completive
'He will start to take the things from the house'

(Various possible relations still need investigation. In the text studied by Bergman, for example, no two ditransitive clauses were found in a clause cluster. Is this accidental? Or a structural restriction?)

All such special placements, and shared elements, contribute to the tying together of two or more clauses (or clause fragments) into a clause cluster which as a whole comprises a structural unit.

It is to see unity in the cluster that one emphasizes that sharing or placement is found in relation to the whole cluster. From this point of view the cluster is a single wave, with the primary clause as its nucleus, but with no possibility of clean-cut segmenting between the clauses without distortion.

If, however, one wishes to study separate clause types in relation to their variants--the alloclauses--distributed in the (higher-layered) cluster (as in §1.3.7 in relation to contrast, variation and distribution), then one must accept the risk of segmenting-distortion, assign each tagmeme to one clause (or assign the tagmeme twice, once to each). This leads to a particle perspective for the units and their allos.

Wave and particle views interlock, however, if a process (wave) view is used to express "deletion" of tagmemes before the allos are described in terms of items and their arrangements (distributions). (One can, however, use a segmenting approach, describing distribution of allos of clauses without implying a dynamic change, if an unmixed item-and-arrangement approach is desired.

That levels of a hierarchy interlock, furthermore, is demonstrated by the relation between §1.3.7 and this one: Whereas in the former the cluster was a distributional matrix for clause allos, in the latter the clause variants significantly help to characterize the cluster. (So, also, allophones conditioned by the stress group may help to characterize the form of the stress group.)

Some tagmeme occurrences can prevent the formation of a cluster. In Vagala, for example, two or more clauses may not fuse (by the relevant deletions) to a cluster (1) if the following clause begins (a) with a time word, (b) with a tagmeme front-shifted[5] for emphasis, (c) with a clause marked for focus (see §3, where such a clause begins a new "paragraph"), (d) where the first clause is du 'to be there', (e) where the original subject is expanded or changed in any way. Other constraints are under study.

2.2.4 Agreement Restrictions within Clause Clusters

In addition to the presence of tagmemes as wholes being affected, and their placement, there are further restrictions concerning tagmeme variants. Certain allotagmas of one clause must be accompanied by the requisite allotagmas in the other clauses of the cluster. In the first clause, for example, a tense particle (e.g., dang 'will') may be used--but further tense markers will not occur in the following clauses of the cluster:

yàá	dâng	ìyzì	dì	vòwl	dì	ná
we	will	get-up	and	walk	and	see

ù	dâng	kpá	naú	là	té	ú	ú	kpá	!díy
he	will	take	cow	the	give	him	he	take	eat

'He will give him the cow to eat'

Similarly, nonfuture--usually unmarked in the first clause--will continue unmarked. See fà 'past':

kpáng	óò	fà	lá	pír	dì	gà	ná	wíá	gàn	dì	bà	sǎl	dì...
hunter	used	past	to-go	bush	and	go	see	things	much	and	come	roof	and...

'The hunter used to go to the bush, see many things, and come home, and...'

A negative cluster, likewise, does not repeat the negative marker:

wà	lángé	gà	ná	ù	màá
he-not	go	go(out)	see	his	mother

'He didn't go and see his mother'

If however, the second clause is to be negated, whereas the first clause is not, then the cluster is broken, an adversative added, and a subject (sometimes fused with negative particle) is reintroduced to the second clause:

ù	lángò	ká	wà	ù	màá	ná!wé
he	went	but	he-not	his	mother	see

'He went but he didn't see his mother'

Contrast the double positive:

ù	lángò	gà	ná	ù	màá
he	went	went	saw	his	mother

On the other hand, the clauses may have mixed aspect, as perfect or imperfect:

ù	eè	níí	dì	rà	tá	wíí!zí	hòpìzì	bíy	máà
he	perfective (did)	water	and	imperfective (continuation)	throw-to	fetish	day		every

'He took water and sprinkled it to the fetish daily'

A cluster restricted--say--to future would be an alloconstruction, as one etic member of the emic construction with its varied list of potential manifesting types.

In Kasem, all clauses of a regular cluster must agree as to aspect and mode. If the series is in perfective (non-continuous) aspect, the mode will be consecutive: if aspect is imperfective (continuous) the mode throughout will be non-future.

In the Kasem occurrence of subject pronouns in secondary clauses, the pronoun must agree with the subject of the primary clause in person, number, and class: its tone is mid in non-continuous clauses, low in continuous ones.

Occasional irregular clusters occur in Kasem--as when the object (instead of the subject) of the primary clause has the same referent as the pronominal subject of the secondary clause--see 'mouse it' in the following sentence (which, normally, would be broken into parallel regular clauses or sentences):

mú	ò	nē	tùtwéy	dì	gyèy	dì	sòli	gùli	yí	dì	nàbíyli	sìn	zwǐn
focus	he	saw	mouse	it	sitting	it	stirring	porridge	and	its	tail	washing	calabashes

'He saw a mouse sitting stirring porridge while its tail washed calabashes'

2.2.5. Development of Clause Subclusters

In §1.1.1 we pointed out that in many West African languages no instrumental tagmeme could be found within the basic, single clause, but that the expression of the instrumental concept required the usage of a clause cluster: 'He take knife cut meat that', i.e., 'He cut the meat with a knife'.

The necessity for using a complex construction for this relation forces us to attribute that relation to some part of the resultant structure. On the surface, one can see only ordinary clauses within a routine cluster. Where, then, is the relation signalled? Carried by what units?

My approach is to treat this construction as a clause subcluster having two tagmemes relevant to that layer of structure. The first is an instrumental tagmeme, the second an action tagmeme:

+ Instrumental + Utilizing-Action

Filling the instrumental slot is a special clause which has formal features accompanying the instrumental semantic implication.

Using, now, data and description worked out with Crouch for Vagala, I wish to demonstrate the difference between a (close-knit) subcluster and the more regular (loose-knit) clause clusters.

The ordinary serial cluster can be viewed as the sum of the component clauses of the cluster. The total meaning of the series is the sum of the included clauses. But in the close-knit series, the subcluster, the meaning of the series is not the sum of the meanings of the included clauses. Rather, the total function is something above and beyond that of the individual elements.

We begin with the illustration from Vagala which parallels Stewart's Twi example in §1.1.1:

ù kpá kíyzèé mòng ówl
he took knife cut meat
'He cut the meat with a knife'

Here 'knife' is the direct object of 'take'. Thus 'He took knife' is a simple regular clause so far as the transitive predicate plus direct object is concerned. Similarly '[He] cut meat' is a regular secondary clause (with regular subject deletion) which includes a predicate with its regular direct object. The first clause--'take knife'--has the meaning 'instrumental'.

This instrumental function is not marked directly by any one morpheme: nor is it marked by any one particular ordered sequence of morphemes. It has to be deduced from a complex of factors. The general overall situation (non-linguistic setting, or setting in discourse) lets one see that the knife is the instrument of the cutting: and restrictions on the sequence show that it is, however, special. Inasmuch as the two included clauses are both transitive, however, and inasmuch as the verb kpá may occur as the first transitive verb in an ordinary sequence, it would appear that one could expect some ambiguity. We now show not only how this ambiguity can occur, but the means by which the ambiguous instrumental type is structurally differentiated from the regular sequence.

An elaborated formula for the instrumental restricted series is:

$$\begin{array}{llll} + & \text{Instrumental} & + & \text{Utilizing Action} \\ & \begin{array}{|lll} +\text{Subj} & +\text{Pred}_{\text{tr}\mid\text{instr}} & +\text{Obj} \\ \mid\text{NP} & \mid\text{kpa 'take'} & \mid\text{NP}_1 \end{array} & & \begin{array}{|ll} +\text{P}_{\text{tr}} & +\text{Obj} \\ \mid\text{V}_{\text{tr}} & \mid\text{NP}_2 \end{array} \end{array}$$

Here we have preserved, on the first level of symbolization, the special two-tagmeme close-knit series, of an instrument set forth and then utilized. Within each of the tagmemic slots (shown by vertical lines) is an included construction, tagmemically symbolized, filling the slot. For each of its slots, in turn, the fillers are given. Here note that the only verb which is allowed as a filler of the instrumental slot is 'take'. Similarly, only the transitive verb is allowed as the second of the series--and its object must be different from the object of the instrumental member of the series.

In contrast with this, the regular series of a sequence type has various allo-constructions which allow a great deal more flexibility. We give typical samples here, involving transitive versus intransitive verb, and presence or absence of object:

$$\text{Allo}_{a1}:\ \begin{array}{lllll} (+\text{S}) & +\text{P}_{\text{tr}} & +\text{O} & +\text{P}_{\text{tr}} & +\text{O} \\ & \mid\text{V}_{\text{tr}} & \mid\text{NP}_1 & \mid\text{V}_{\text{tr}} & \mid\text{NP}_2 \end{array}$$

$$\text{Allo}_{a2}:\ \begin{array}{lllll} (+\text{S}) & +\text{P}_{\text{tr}} & +\text{O} & +\text{P}_{\text{tr}} & +\text{O} \\ & \mid\text{V}_{\text{tr}} & \mid\text{NP}_1 & \mid\text{V}_{\text{tr}} & \mid-\text{NP}_1 \end{array}$$

$$\text{Allo}_{a3}:\ \begin{array}{lllll} (+\text{S}) & +\text{P}_{\text{tr}} & -\text{O} & +\text{P}_{\text{tr}} & \pm\text{O} \\ & \mid\text{V}_{\text{tr}} & & \mid\text{V}_{\text{tr}} & \mid\text{NP}_2\ [-\text{NP}_1] \end{array}$$

$$\text{Allo}_{b}:\ \begin{array}{lll} (+\text{S}) & +\text{P}_{\text{intr}} & +\text{P}_{\text{intr}} \\ & \mid\text{V}_{\text{intr}} & \mid\text{V}_{\text{intr}} \end{array}$$

$$\text{Allo}_{c}:\ \begin{array}{llll} (+\text{S}) & +\text{P}_{\text{tr}} & \pm\text{O} & +\text{P}_{\text{intr}} \\ & \mid\text{V}_{\text{tr}} & & \mid\text{V}_{\text{intr}} \end{array}$$

$$\text{Allo}_{d}:\ \begin{array}{llll} (+\text{S}) & +\text{P}_{\text{intr}} & +\text{P}_{\text{tr}} & \pm\text{O} \\ & \mid\text{V}_{\text{intr}} & \mid\text{V}_{\text{tr}} & \end{array}$$

These allo-constructions are designed to show certain co-occurrence restrictions. Allo-Set a begins with a regular transitive verb and is followed by a direct object--with the direct object of the second transitive verb deleted (Allo a-2) if it is the same as that for the first. The third allo of Set a with transitive verb deletes the first direct object if it is in a sequence of sentences, such that the context implies clearly what this object is. Allo b includes intransitives only; whereas c and d show transitive with intransitive, and intransitive with transitive respectively. (Further allos occur when emphasis leads to shift of certain tagmemes to the front of the construction--or when peripheral tagmemes are involved. These are not of concern to us at the moment.)

What we wish to point out is that *ambiguity* can occur with the instrumental and the sequence series *only* when the sequence is of such a type that the first verb of a sequence is kpa and the second verb is transitive with a noun-phrase object which differs from that of the object of the first noun phrase. Such a circumstance can occur with

ù kpá bìkùwngí dì ɛè kyáàl
he took round-stone and made [did] blood

That is 'He "x'd" and (he) "y'd".'

The second of these clauses, as indicated by the formula, can have the first verb replaced without destroying the overall relationship of the parts--for example, 'He saw a stone and made blood'.

On the other hand, the same morpheme sequence might conceivably manifest the instrumental subcluster: 'He, with "x", "y-ed"', 'He with a stone made blood'. But in that case the kpa 'take' is replaceable by no other verb; and the second noun cannot be replaced by the first (*'He take stone made stone') and then be deleted (*'He take stone make') according to the formula for the regular cluster, Allo a-2: nor can the second verb be replaced by an intransitive (*'He take stone ran') as for allo-c of the regular cluster.

The instrumental series is a close-knit subcluster of the grammatical hierarchy coming between the simple clause and a regular--loose-knit--clause cluster, and constituting a complex unit in its own right, with its own contrastive tagmemic sequence.

In our view, furthermore, these unit subclusters with their special tagmemes appear to be somehow "*new*" to the language. The language is in a *state of transition*. Here the transition is toward a more complex structure of clause clusters. Only a *dynamic* view of the total system can do descriptive justice to such data.

Although we have used the instrumental subcluster for illustrative purposes, Vagala seems to have various other types of subclusters currently relevant, or in process of development:

Benefactive:

In the benefactive, the verb tè 'give' works with the main verb, which precedes it. The object of tè is the benefactee of the action of the main verb. In this construction tè takes on a slightly specialized meaning which we would translate in English as 'for'. There are restrictions on the objects which tè may take in this construction:

ù wà sá ígyò tè ù bówl
he came danced igyo-dance give his village
'He danced the igyo dance for his village'

Indirect Object:

Certain verbs may take two objects--a direct and an indirect object. But in terms of frequency- if the verb is tè 'give' it will usually resort to a two-verb construction--kpá 'take' plus the direct object, and tè 'give' plus the indirect object. In this construction the ditransitive verbs seen so far are limited to tè and bàglì. There are further restrictions on the objects, since the first object must be different from the second, and the classes of nouns filling the second object slot are limited:

ù kpá !híí !báglí ń
he took yam showed me
'He showed me a yam'
compare: ù báglí ǹ híí
he showed me yam

Accessory:

The verbs kpá 'take' and laù 'take hold of' are often used as accessory verbs to a main verb. The main verb may occur alone and take an object, but some verbs rarely occur without the accessory verb. The accessory verb precedes and takes the object (if there is one) and the main verb follows, without an object, since the object must be the same in this construction, and, therfore, not repeated:

ù kpá !nméǹg dú ú !húwr
he took rope put-in his bag
'He put the rope in his bag'
compare: ù dú !nméǹg ù húwr
he put rope his bag

Accessory motion:

Preliminary counts suggest that motion-verb combinations are more common than any other type in the language. The verb ìyzì 'get up', for example, in one set of texts, occurred alone 45 times, and in combination with another verb 180 times. In many instances the meaning had become specialized or slightly changed.

Another verb kààlì 'to leave' occurred alone 45 times and in combination 60 times. (It occurred alone more often in questions and commands.) When it occurred in combination it often had a slightly different or specialized meaning.

ù | kpá | kààlì
he took went
'He went'

2.2.6. Development of Auxiliary Verbs from Clause Clusters

It should not appear surprising, in the light of the preceding section on subclusters, that auxiliary verbs--joining main verbs to make complex verb phrases--should develop out of clause clusters. Once the regular full cluster is weakened to a subcluster with special verb and special distributional restrictions, the subcluster would look like a phrase as soon as a few remaining components (e.g., object of the first-verb-turning-auxiliary) were also lost.

The weakening process, once under way, does not always stop there. The auxiliary verb may itself lose so many of those characteristics identifying it as a verb, that it is more convenient to treat it as a particle. New parts of speech, or new classes of forms may be created in this process--or a class may occur, nonuniform in type, in a transitional state.

It is this *dynamic* (wave) component of *synchronic* description that I now wish to illustrate. I continue with Vagala data, and in collaborating in its presentation with Crouch.

Several sets of verbs occur: transitive, such as ló 'hit', which may optionally take an indirect object; intransitive verbs such as sòw 'sit' which are never allowed to take an object; equative eè 'is'; etc. Many of these verbs can occur in clause clusters in a fairly free manner. (These have often been called "serial verbs".) See §2.2.

Note for example:

ù sòwgó ká!rá ní dì à ló ká!oílà
she sat chair on and imperf. pound fufu [food]
ù ée bá kòówrì dì rà sów bà séèy
he is their chief and imperf. sit their front
'He is their chief and sits in front of them'

In a sequence of two such verbs the first--the primary one--often has a specially-marked form which differentiates it from others in the sequence after it. Note, for example, that the verb sòw 'sit' has low stem tone and a suffix when it occurs in the primary clause, but it is high and does not have the suffix when it occurs in a cluster:

ù sòwgó ká!rá ní　　　ù lé ká!rá dì sów
he sat chair on　　　he got chair and sat

Note, also, that preceding either the primary verb or the secondary verb there can be the particle rà or à 'imperfective' (see examples above).

Now, however, we note that preceding the optional imperfective marker there can be a modifying morpheme--modifying the main verb by an indication of motion. Note, for example:

ù wà á !ló ká!bílà
he came imperf. pound fufu
ù gà á !sów kàrá ní
he went imperf. sit chair on

Our intent here is to call these two elements, wà and gà verbal auxiliaries--a subset of verbs--and the primary or secondary verb as main verb. Auxiliary plus particules plus main verb, etc., make up the verb phrase, whether primary or secondary.

The problem: These two auxiliary morphemes are not allowed to have the kind of affixes which occur with the main verb of a verb phrase. With the main verb dáálí 'cook', the final i may be dropped and replaced by ô 'perfective'. When no object follows the verb, this ending is restricted to occurrence with a positive verb. If an object follows, the i form is used: or the i may be replaced by e 'perfective' if the verb is negative. (This ending is also used in various other situations, as, for example, when emphasis is on the subject. The further problems here are irrelevant to our discussion.)

Note, for example,

bà dáálí dó!zí
they cooked soup
bà daálô
they cooked
bà wà dáálé
they not cook

The wà and gà auxiliaries, however, are never allowed to have these suffixes. In this sense, therefore, they are sharply different from ordinary verbs. The verb which follows them, however, will be marked not only with one of these suffixes but all the other evidences of a main primary verb of a regular series.

In addition, four other characteristics make the wà and gà differ from main verbs: (1) They cannot be preceded by the imperfective ra. (2) wà and gà are not allowed to occur alone as verbs; they occur only in this position modifying a main verb. (3) The tone rules which apply to wà and gà are a different set from those which affect ordinary verbs: The tone of wà and gà may be raised by a high tone on a preceding word in nonfuture constructions; in the future constructions (including purpose clauses) wà and gà are never raised by the preceding high tone subject or particle, whereas other low verbs are. (4) Unlike other verbs discussed, whether they are primary or secondary in a cluster, in a series these auxiliaries are not allowed to have those complementing tagmemes such as location or adverb which sometimes accompany ordinary verbs.

If this were the complete picture, one might feel that it was not worthwhile calling these morphemes verbs in any sense--but that it was preferable to set them up as some kind of particle (even though in a neighboring dialect of Vagala the wà and gà act as fully regular verbs the dynamic breakdown has not gone as far in that dialect).

Our reasons for treating them as verbs: (1) In the same kind of 'auxiliary' function there are three further stages of morphemes transitional between these highly dependent morphemes and the regular independent verbs. It is convenient, therefore, to treat wà and gà as verbs--of a special auxiliary type--in the same way as we want to treat the morphemes which are in a lesser stage of breakdown in the same class. The morpheme kuàrì 'make, fix', for example, has a slightly greater degree of freedom. It can, as a matter of fact, come alone as a verb or as primary in a cluster. Note the following illustration:

ù kuárô
'it is-fixed'

(2) In these circumstances it can have peripheral tagmemes, as can any regular verb. When, however, kuàrì comes in the preposed auxiliary position where wà and gà can occur, several changes occur. It takes on a special meaning of 'again'. Note, for example:

ù kuàrì là dìá
he again went home
'He went home again'

(3) It is no longer allowed to have a perfective ending which was possible for it earlier[6] (see illustration under [1]).
(4) In contrast to verbs after wà and gà, a verb following kuàrì will be treated like the secondary verb of a cluster.

One could, presumably, refuse to identify the auxiliary kuàrì with the separate verb kùàrì. If one adopted this course, then one would merely move the homophonous auxiliary kùàrì into the class with wà and gà. We, however, much prefer for purposes of this article, to treat the two kuàrì forms as still the same morpheme. We are attempting to bring forth the evidence which shows that the system is in a state of transition--and it is precisely in terms of residues such as this one that incompleteness of change can be observed. The form kuàrì, in our view, is in the process of becoming a particle. If all the members of the class were like wà and gà, on the other hand, we would assume that this change of the class from verb to particle were already complete.

A third stage of transition is even closer to the regular verb than is kuàrì. In this sub-set, also, we have just one member, bìr 'to turn'. With this same meaning, the verb occurs as a regular member of a cluster--either primary or secondary. When it is the primary verb, the secondary verb following has the serial form.

ù bítò bà
he turned came
'He came back'
ù ízô dì bìr ù hár
he got up and turned his back

In these regular positions of the cluster, as main primary or main secondary verb, it (like other verbs) can have the normal sets of peripheral tagmemes. Note, for example, the following:

ù bír !éng
'He turned here'
ù bír mánáng
'He turned quickly'

When, however, bìr occurs in the auxiliary tagmemic slot, then two restrictions remain: (1) No peripheral tagmemes are allowed, and (2) a special meaning is given to it--the meaning of 'again'--as, for example, in ù bìr ngó 'He again said'. When carrying this meaning, the word is not allowed to serve as an isolated verb--nor as a main verb in a cluster. The developing tagmemic slot has forced on it a semantic change.

We come now to an even more difficult decision. Should wèyr 'be able', kúti 'do purposely', and fuúrì 'do unintentionally' be treated as auxiliaries or as regular verbs? In favor of treating them as main verbs we note:

(1) They take the perfective endings:

ù wéytò lɔ́ káꜝbílá
he is-able pound fufu
'He is-able to pound fufu [mush]'

(2) The verb which follows them has the secondary form, not the primary form:

ù kútò bìr
'He purposely turned'

(3) They can stand alone:

ù wéytò
'He is-able'

On the other hand, we choose to treat these as auxiliaries--or, more accurately, as just moving into the auxiliary function--for the following reasons: (1) If, in rare instances, these do stand alone, it is usually in a cultural context in which a following main verb is understood, as for example in the following situation:

Question: ì wéytò eè gúng '[Are] you able [to] do that?'
Response: ǹ wéytò 'I am-able'

(2) When occurring with another verb following them (even though the following verb is in the secondary form as just indicated above) no peripheral tagmemes are allowed to occur with them. (There can be no adverb, or locative, etc., with them.) In this respect, therefore, they have already begun to receive the specialized function which characterizes the restrictions on the preceding three subsets.

In concluding this section, therefore, we ask: How does a new part of speech develop? What kind of synchronic evidence would provide data which would show such a part of speech in process of emerging? We suggest: (1) shorter forms of items may develop with special restricted distributions. (2) Special minor rules--as for tone--may be brought to bear on them. (3) Special meanings, reflecting something about the positional usage may be added. Phonologically there may be special fused forms, pro-clitic forms, tonal characteristics. Lexically, the semantic component may be modified. Grammatically, restricted distribution is involved. The developing class--or developing part of speech if one wishes to call it that--involves the entire system.

We turn now to a further set of morphemes where it would appear that this development has run its full course. We refer specifically to a set of morphemes--in distinction to the auxiliary verbs which we have mentioned--which we can call adverbial particles: (1) These are allowed to have no peripheral tagmemes attached to them. (2) They do not occur in isolation. (3) They do not have inflection. (4) They cannot be head of a verb phrase. (5) They are involved exclusively in modifying--in some sense--the verbal phrase which they introduce (if they occur at all). (6) They are in the first position of the verbal phrase. (7) There is no obvious relationship between these and other free verbs. Nevertheless, because of the pattern of verbal sequence which is involved in the verb phrase, it would appear likely that these have a verbal source. Evidently here they have been subject to special restrictions. The source-verbs from which these may have developed are unknown or uncertain.

Having dealt with pre-verb auxiliaries and their intermediate status between particles and full verbs, we can consider a similar approach to possible post-auxiliaries. One candidate for such a position is the word hùnzì 'to fail'. (1) This verb never occurs alone: it must be preceded by another. (2) It shares any peripheral tagmemes with the preceding main verb (never has any which refer only to it.) Example:

ù kuár-ù hùnzì
he fix it fail
'He wasn't able to fix it'

Some other verbs, e.g., tùng 'finish', kùng 'tire', pìng 'be satisfied' also seem to share peripheral tagmemes with the preceding verb. Examples:

ù pátò tùng
he hoed finished
'He finished hoeing'
ù pátò kùng
he hoed tired
'He hoed until he was tired'
ù dí!ywǒ pìng
'He ate until he was satisfied'
full

(2) The verbs há and tá, both meaning 'throw' frequently have a slightly different meaning when occurring with other verbs:

ù gíl û há
he left him throw
'He deserted him'
ù lé û há
he got him throw
'He saved him'
ù nméng û há
he cut-off it throw
'He cut it off'

(3) When used as post-auxiliaries, these verbs may have peripheral tagmemes only if these tagmemes apply both to the auxiliary and to the main verb:

ù kuár-û hùnzì dèèlà
he fix-it fail yesterday
'He wasn't able [yesterday] to fix it yesterday'

So, also, tùng 'to finish', kùng 'to become tired', pìng 'to be satisfied':

ù pátò tùng dèèlà
he hoed finished yesterday
'He finished hoeing yesterday'
ù pátò kùng dèèlà
he hoed tired yesterday
'He got tired hoeing yesterday'
ù díywǒ pìng dèèlà
he ate satisfied yesterday
'He ate until he was satisfied yesterday'

FOOTNOTES

[1] Dependent clauses, whether initial ones which may optionally precede the sentence nucleus, or final ones, have been but little studied for this report. But see some earlier work: Structure of Subordinate Clause Groups in Kasem, a paper presented by Kathleen Callow to the Fifth West African Languages Congress (April, 1965).

[2] I have changed the order in which he listed them to parallel more closely that of Jacobs.

[3] Kennedy suggests further restrictions of distribution in relation to some special clause sequences, involving benefactive, desiderative, and comparative, and following auxiliary. It is not clear to me from his data, however, how these would be related to clause subclusters--see §2.2.5. A complete distributional statement must await further research.

[4] Kasem is the one exception listed in our materials, where a secondary clause must begin with a pronominal subject. There the identification of a clause sequence as a clause cluster is determined by other criteria, such as relation to slots in the sentence (§2.1) and agreement restrictions in the series (§2.2.4).

[5] K. Callow states more generally, for Kasem, that in the secondary clause no preverbal tagmeme ever occurs other than the [pronominal] subject--so that in secondary clauses there is obligatory absence of the introductory and temporal tagmemes, and of all preverbal particles, including negative ones. (Negation of secondary clauses must be accomplished by dropping the cluster form, adding a conjunction, and producing a complex sentence.) Consequently, fifty percent of their observed secondary clauses were minimal--pronoun plus verb (whereas many--most--West African languages would also drop the pronoun).

[6] There is some possibility that the loss of this ending is historically conditioned by its occurrence after a preceding particle kà which would suppress the ending. This speculation we are unable to check at this point.

CHAPTER III: BEYOND THE SENTENCE

3.1. Sentence Clusters in Paragraphs

In §2.2. extensive data were given to show that clauses entered clusters and subclusters, forming units larger than the clause but smaller than the sentence. Now I wish to show that there is some evidence that sentences sometimes enter into formal units larger than the sentence but smaller than the narrative or discourse. The evidence, still in a very tentative form, is again drawn from the work of Crouch on Vagala.

What we wish to accomplish, therefore is to find: (1) Some kind of formal marking of a primary independent sentence, versus a secondary sentence, following this independent one. (2) We must then show that the second element of this sequence is indeed a sentence, and not merely a clause. Otherwise, the independent-dependent combination could be merely a clause cluster of the type already discussed in previous sections. (3) We then wish to show that following the independent one there can be more than one dependent sentence--there can in fact be a sequence of dependent sentences, all of them marked as other than independent. Finally (4) we wish to suggest that the relationships between the independent and the dependent elements in these paragraphs may lead to sets with semantic significance.

(1) There is a clear formal marking, in at least some[1] of the primary independent sentences versus the secondary dependent sentences. They are characterized by a contrastive complicated pattern of tone differences, occasionally supplemented by special suffixes. In some instances, for example, the dependent verb will be mono-syllabic high--as for she 'carried [on head]'--whereas the independent form has the first syllable in low tone, and an added suffix gó with high tone. Note the following contrastive pair:

Independent: ù kyìgó níí bà
she carried water came
Dependent: ù kyí níí bà
she carried water came

The independent sentence of the paragraph can often be thought of as a variety of 'topic' sentence--or one with the verb marked for focus of attention. For a contrastive pair in context, note the high tone of yáꜜú 'buy' in the first sentence but also in the second sentence the low tone yaù 'buy' (the translation could be in past tense, by implication of the context, not by formal marking):

ù ngó dí ú yáù híá yáú !wá
'He said that he buy yams market.'
ù ǹ lá yáú!wá ù yaü híá déy
'He when go market he buy yams there'
i.e., 'He said "Go buy yams in the market" [And so] when he
went to the market he buy yams there'

The preceding illustration was chosen from Command-Response paragraph structure in order that the same verb would occur in the two parts of the paragraph and therefore the focus and out-of-focus markings could be clearly seen. In order, however, to see the focus versus out-of-focus differences where the verb changes, we use a pair of paragraphs. In the first paragraph, the primary sentence will have the verb in focus, but in the secondary sentence a verb out-of-focus; in the second paragraph the first sentence will now have the latter in focus and the former first verb will become the second, but out of focus. Note the verb kyàg 'wash' in focus in the first paragraph, versus nyèr 'sew' out of focus; and nyèr in focus, but kyàg out of focus, in the second sentence pair:

háàng là kyág wégyèzí ù gyaàrí géy nyèr tàgtà
woman the washed clothes her husband contrastive sewed shirt

But now note nèyr in focus, with kyàg out of focus:

báàl là nyér tágtà ù háàng géy kyàg wègyèzí
man the sewed shirt His wife contrastive washed clothes

Sometimes, as in a clause cluster, tenses are given only in the primary sentence, and not in the secondary sentence 'elaborating' the first:

ǹ níy ǹ háàng né dé rá náà ǹ háàng kyág
I and my wife emph yesterday imperfect fight. my wife insult
(tense)
ń kyàgá !bél.
me insult one
'Yesterday I and my wife had a fight (quarrel). She insulted me
(with a certain insult)'

(2) We next wish to show that the structure which we have called paragraph is not, in fact, merely a clause cluster of types such as we have had earlier. One might have assumed that all such paragraphs could be defined as simple clause clusters with the following rule: In the clause clusters here called paragraphs, the second clause has a subject different from the first,

and therefore the second subject is retained; but in the clause clusters previously defined (§2.2) the second subject happens to be identical with the first and is automatically deleted. This at first appears to be an attractive rule, since relationships semantically between elements of a clause cluster are often similar to the relationships between the clauses of the sentences of a sentence cluster. Note the paralellism of structure in the following two illustrations, in which the first has two sentences, but the second two clauses of which the second has deleted subject:

ù	dáálí	dó!zí	dì	díy	dì	pìng
she	cooked	soup	and	ate	and	was satisfied

ù	dáálí	dó!zí		bà	díy	dì	pìng
she	cooked	soup		They	ate	and	were satisfied.

How, we then ask ourselves, can one prove that the first set is indeed a sequence of sentences--rather than one of clauses?

It appeared to us that the crucial differential evidence to separate these as belonging to different levels of the grammatical hierarchy would reside in studying more complex sentences. We will recall that from the Callows' material (§2.1) a single complex sentence may have an optional dependent clause, an obligatory independent clause, and a following optional dependent clause. Furthermore, the Callows demonstrated that in each of these three positions within a sentence there could be a clause cluster. Note, therefore, that there is a crucial element in such a complex sentence--each component of the sentence, each dependent and independent clause complex, can be either a single clause or a clause cluster. It follows, therefore, that a complex sentence with subordinate and independent clauses is not the same as a sequence of clauses in a cluster (since it is essential that one be able to speak of several clause clusters within a single sentence which is complex in this way). If, therefore, one can show that, in the focus versus out-of-focus sequence of independent versus dependent sentences the dependent sentence slot (or the independent slot) may be filled by a complex sentence which is itself composed of dependent and independent elements which are clause clusters, it follows that the sequence of independent dependent sentences must be on higher level than that of the clause clusters included within one of the major parts of one of the other of the sentences.

Notice, therefore, that in the second part of an illustration given earlier, there are dependent and independent parts to the sentence:

ù ǹ lá yaú!wá   ù yaù híá déy
he when went market he bought yams there
'When he went to the market he bought yams there'

Here the first dependent clause is 'when he went to the market,' and the second is 'he bought yams there.' Note, furthermore, that each of these parts can be expanded into a clause cluster:

ù ǹ lá yaú!wá dì ná híá ù yaú áhíná bà à ní dìá
he when went market and saw yams he bought some came them with house

Note that in this expansion of the sentence type there is a clause cluster in the dependent part of the sentence ('went market and saw yams') and another in the independent part ('bought some, came'). Thus it is clear that this element as a whole, including the temporal dependent clause, is not a clause sequence but a genuine complex sentence, each part of which may, in turn, include a clause cluster as already defined.

With this decision reached, it now must be clear that the full complex, including the two sentences, must be on a higher level. Note, for example, the following expanded paragraph:

ù ngó dí ú yáù híá yaú!wá bà à ní . ù ǹ lá yaú!wá
he said quote he buy yams market bring them with. he when went market
dì ná híá ù yaù áhíná bà à ní !díá
and saw yams he bought some came them with house
'He said he should buy yams at the market and bring them home.
When he went to the market and saw yams, he bought some and
brought them home'

In this expanded paragraph there are two sentences each of which includes clusters of clauses. Nevertheless the sentence sequence does not include two sentences which are on a par with each other, inasmuch as the first is marked for independence and focus, and the second is marked by the respective tonal elements as being dependent and out-of-focus.

(3) We now turn to the next element of the argument: In the dependent slot of the paragraph, there can be more than one dependent sentence. There is a parallelism between clause cluster and sentence cluster, on a higher level of the hierarchy. To the preceding illustration, for example, the following sentence may be added:

[paragraph contined]...ù ǹ héyl ú dìá dì zùu ù
he when reached his house and entered he
kyí díyngèe dì yìr ù bìéy
stood [in]courtyard and called his child

This third sentence is marked as being dependent. (Contrast it with the indesimple sentence:

ù kyìgó dì yìr ù bìéy
(he stood and called his child)

Note, furthermore, that in this third sentence of the sequence there is a dependent and independent section, which, in accordance with the Callows'material, demands that it be treated as a complex sentence rather than as a serial clause; and note, finally, that in each part of this third complex sentence there is indeed an included clause cluster which once more shows that the levels are not the same.

(4) Just as one can have contrastive clauses (such as transitive versus intransitive versus equative) so one can have different kinds of paragraph structures. The analysis of these is not yet complete. How many there will ultimately prove to be, and the full analysis of the contrastive markings and their justification in terms of such internal components plus contrastive distribution in still larger structures, is not yet clear--and a running text cannot yet be cut into such paragraphs without residue or indeterminacy. Here we merely wish to suggest the direction in which the research is moving, and reserve analysis for later study.

In general, we will label the independent element of the paragraph the *Proclamation*, and the succeeding dependent sentence or sentences in series, as *Commentary*:

Command plus carrying out of command: (see first paragraph illustration, above.)

Request plus carrying out of a request:

ǹ dá nyíyngì í kúarì ǹ dìá !té ń. ù kuàrì
I imp. want you fix my house give me. He fixed
ù dìá !té ú
his house gave him
'I want you to fix my house for me. So he fixed it for him'

Statement of intent plus carrying out of intent:

ù ngó ù ráng !lá gà peèzì ù mèé. ù ǹ
'He said he was going to ask his father. So he
lángé ù peèzì ù mèé
went and asked his father'

Principal action initiating sequence of actions plus subsequent action:

ù kpá kpànfó dì là píyr. ù ǹ vólé guúng ù
he took axe and went, bush. He when walked long he
wà hèyl dà-zéyng !bél dì kpá kpán fó nmèng.
came reached tree-big one and took axe chopped.
ù kyòwl
It fell.

Initiating action plus result of action:

ù kpá daàzí dú níyng níyng laù daàzí là
he took wood put in fire Fire caught wood the
dì fuúwn á máà tùng
and burned them all finish

3.2. Discourse Structure

Just as a simple phrase like big John can be treated as a construction wave, with John as nucleus and big as margin, so also a narrative may have nuclear sections and marginal ones. The use of such wave patterns is a universal.

When margin and nucleus are seen in discourse--whether via conversation, narration, oration--one often finds, therefore, some kind of introductory section, a basic body section--or a series of them--and some type of concluding element. These may be considered as tagmemes of a discourse construction.

3.2.1. Narrative

Within the workshop Ron Rowland first developed this area for us, in Sisala. In the process of exploring clause structure he noticed that various kinds of time expressions came sometimes at the beginning of clauses, sometimes preceding the predicate, and sometimes final--or at other places in the clause. When he investigated, it became apparent that the different placements were not random, but were in part conditioned by their place in discourse--and, reciprocally, in part the placement could be viewed as a contrastive feature of the discourse pattern.

Various types of discourse differed from each other in ways barely investigated. In narrative, for example, Rowland failed to find certain words of a type common in conversation--words such as 'day before yesterday,' 'yesterday,' 'today,' 'tomorrow,' 'day after tomorrow.' Compound time words and time phrases, however, were found in narrative.

Within narrative structure a sequence of tagmemic slots seemed to occur:

± Preview ± Narrative Setting ± Sequential ± Focus change...±Climax
±Comment by Narrator ± Summary Application

In general, each slot in this structure has respective identifying formulas composed of the kinds of variants of transitive clauses occurring there.

Preliminary formula for transitive clause in slot for narrative setting:

$$\pm \overset{f}{\mathrm{TP}_1} + \mathrm{S{:}NP} \pm \overset{f}{\mathrm{Part}} + \mathrm{Pr}_{tr} \pm [?]\mathrm{O{:}NP} \pm \overset{f}{\mathrm{LP}} \pm [?]\mathrm{AdvP}$$

Here the superscript f implies fixed order, in this discourse slot (the time phrase in that slot of narrative setting comes specifically here); subscript 1 labels the permitted subclass of noun expressions allowed there.

The sequential slot has transitive allos in a contrasting order:

$$+ \mathrm{S{:}NP} + \mathrm{Pr}_{tr} \pm [?]\ \mathrm{O{:}NP} \pm {}^{f}\mathrm{LP} \pm [?]\ \mathrm{Adv\ P} \pm {}^{f}\mathrm{Part/TP}_{1/3}$$

Here time phrases, or particles, are rare, and limited to clause final position; time phrases exclude the types mentioned for conversational style, but include those for narrative plus element T3 which is a particle fa meaning 'pre-present'--i.e., of historical relevance.

In the focus-change slot, only one sentence occurs at a time. Its structure is similar to that of narrative except that particles do not occur between subject and predicate; and the clause may optionally end with wa/ya 'emphatic.'

The Climax slot has a formula like the setting slot, minus the initial time tagmeme, but adding optional final emphatic particles.

The summary slot (and the initial preview slot) has the time particle fa--and no other--occurring optionally between subject and predicate, or between subject and particle + predicate.

Results from Vagala research--even in a most preliminary form--reinforce, for West Africa, conviction that structures like that hinted at for Sisala may be widely found. Special preliminary markers, in addition (like 'a long time ago', for English) may open the story:

ǹ mɑ́r té kéyng
my story emph. (like) this
'This is my story'

or ì zúm kúng là ǹ bá yá!zí ní bòwl
you know thing the rel-marker come salt with village
'Do you know what brought salt to the village?'

Or, in summary, close the story:

náng!dar ù kpá ningzú!má dì ná ú hìng bàlà béy
spider he took sense and saved himself elephant from
'Spider saved himself from Elephant by his cleverness'

Or, in a sign-off slot:

ǹ tóǹò
I finish

3.2.2. Indirect versus Direct Discourse

In the previous section I showed that discourse could have a tagmemic structure--a grammar above the sentence level. I now add discussion of a problem in Bariba in which the cultural setting, the focus of attention, and sequence of pronominal reference are heavily interwoven in the structure of direct versus indirect discourse. The data are provided by Jean Soutar; she also collaborated closely in their presentation.

When, in Bariba, should one use *direct* discourse in a quotation and when *indirect*? Constraints are imposed by the total discourse situation, by parts of sentence, and by choice of quotation type.

Primary, Secondary, and Tertiary Statement Patterns

We need to be able to refer to statements which contain no quotation--i.e., nonquotation, or *primary*[2] statements; to those with an included quotation--which for convenience sake may be called a *secondary* statement; and to those statements with a quote within a quote, which may be called *tertiary*. For our present purposes, a primary statement is viewed as composed of one part; the secondary of two; the tertiary of three.

The primary statement has a nonquotation filling its total area--e.g., 'The man saw the boy', etc.

The secondary statement has an initial *quotation indicator*, containing a verb of saying, reporting, or the like, and a second part, representing the quotation reported: e.g., He said to the man that the boy would come. This quotation is called a *first degree quotation*. The quotation indicator has two diagnostic pronominal (or nominal) parts whether explicit or implicit, which identify the speaker within the quotation indicator (e.g., 'He [said]') and the audience within the indicator ('...to the boy').

The tertiary statement pattern begins with a quotation indicator, as does the secondary statement. It then, however, follows the quotation indicator with a second quotation indicator which serves simultaneously as a first degree quotation.

Following the second quotation indicator, the tertiary statement then has, in its third position, the second degree quotation:

(3) yèyá$_1$ na$_2$ na$_3$ n$_4$ nun$_5$ sɔ̃$_6$ Woru, siba$_7$ nɛɛ$_8$ nɛn$_9$ dumâ$_{10}$ ba$_{11}$ koo$_{12}$ ka$_{13}$ yākuru$_{14}$ ko$_{15}$ (Words--minus some names--are numbered to key into the translation.)

'So$_1$ I$_2$ came$_3$ in order that I$_4$ tell$_6$ you$_5$ Woru, they [those people]$_7$ said$_8$ [to me] it is my$_9$ horse$_{10}$ they$_{11}$ will$_{12}$ make$_{15}$ a sacrifice$_{14}$ with$_{13}$.'

This plan can now be diagrammed as in Figure I.

FIGURE I: STRUCTURE OF BARIBA STATEMENTS SHOWING DEGREES OF QUOTATION

Non-Quotation Primary Statements	Statements with unrestricted predicate and object 'The boy will come'		
Quotation, Secondary Statements	Quotation Indicator 'He said [to you]	First Degree Quotation "I will come"'	
Tertiary Statements	Quotation Indicator 'You said [to me]	Second Quotation Indicator as First Degree Quotation "He said [to you]	Second Degree Quotation I would come"'

We turn to the distribution of direct versus indirect speech in quotations, predictable by various criteria.

Indirect Status of Second Degree Quotations

In the third slot, that of the second degree quotation of a tertiary statement, all quotations are indirect.

(When the particle mà 'that' precedes a quote, we know--as in the English translation--that the quotation is indirect. Unfortunately, for the ease of our analysis, the mà is optional, leaving some ambiguity. Various items other than mà occasionally give hints indicating directness or indirectness of discourse.)

Alternative Forms of First Degree Quotation

In the second slot--the quotation--of a secondary statement of Figure I, direct discourse is sometimes used for the quotation, and sometimes indirect.

Off-Stage First Degree Quotations, as Indirect

In a narration, the setting of the scene before the principal action itself begins, may be called "off-stage". Quotations within such introductory off-stage parts of a narration are in indirect discourse.

On-Stage Quotations with Ranking Matrix

The main part of a discourse, including the action parts of a long discourse, are "on-stage," in contrast to the introductory (or concluding) off-stage elements. An on-stage quotation may be direct or indirect. Several factors control the choice of the indirect or direct form of a first degree on-stage quotation. One is its relation to the dramatis personae (DPs) of the quotation indicator (Q. I.) preceding it. In Matrix A, this factor is charted. The character (first, second, third, or fourth [less important], whether singular or plural) chosen by the narrator to be speaker in the quotation indicator, serves as marking one of the rows of the matrix. The character chosen by the narrator as explicit or implicit audience to the subject of the quotation indicator serves to label one of the columns. At the intersection of the relevant row and column, the cell is filled either with the symbol I, meaning 'indirect discourse will be used for the first degree quotation, after the quotation indicator'; or the cell is filled with D for direct discourse; with I/D for sometimes one and sometimes the other; or with A when the forms are expected to be permanently ambiguous; or with question mark when data are lacking.

MATRIX A: OCCURRENCE OF A FIRST DEGREE QUOTATION AS DIRECT OR INDIRECT, IN ACCORDANCE WITH THE DRAMATIS PERSONAE OF THE PRECEDING QUOTATION INDICATOR.

DPs of the Quotation Indicator	Audience in Q. I.			
	2	1	3	4
Subject of Q.I.				
2	?	I	I	I
1	I	A	I/D	I/D
3	I	I/D	?	I/D
4	I	I/D	I/D	?

The matrix has several quite unexpected characteristics: Note, first that the rows and columns have been specially changed (permuted) from the routine order of 1, 2, 3, 4, to the order 2, 1, 3, 4. Only by this permutation is its special characteristic clearly seen--that whenever 2 (singular or plural) is involved at all in the quotation indicator, whether as speaker or audience, the succeeding quotation will be indirect. The presence (the involvement) of 2 overrides the presence of any other person. I call this a 'ranking'[3] structure.

For an illustration of the 3-2 cell, note the following where the Q.I. is 'They would say [to you]' and the quotation is indirect in that cell of Matrix A (i.e., M.A_{32}):

beń tii$_1$ vè$_2$ ba$_3$ tunuma$_4$ ba$_5$ koo$_6$ bikia$_7$, amɔna$_8$ mba$_9$ ka$_{10}$ mba$_{11}$ i$_{12}$
ka$_{13}$ man$_{14}$ sikua$_{15}$

'When$_2$ they$_3$ arrived$_4$ they$_5$ themselves$_1$ would$_5$ ask$_7$ [you] how$_8$ you$_{12}$
buried$_{15}$ me$_{14}$ and with$_{13}$ what$_{11}$'

On-Stage Quotations in Focus

Leaving now the quotations preceded by an indicator containing 2, we study only those quotes varying from I to D, and where the indicator has only 1,3, or 4.

The pattern found for general conversation, on-stage, in focus is represented in Matrix B. Off-diagonal cells are all direct. Tha parentheses indicate infrequent forms; it is rare to have the general conversation in focus when the conversation is between the narrator (1) and people other than 2.

MATRIX B: ON-STAGE GENERAL CONVERSATION IN FOCUS

DPs of the Quotation Indicator	Audience in Q.I. 1	3	4
Subject			
1	A	(D)	(D)
3	(D)	?	D
4	(D)	D	?

For an illustration note:

kpa$_{1}$ Woru$_{2}$ na$_{3}$ ù$_{4}$ nɛɛ$_{5}$, Sabi, sá$_{6}$ ǹ$_{7}$ de$_{8}$ yam$_{9}$ mí$_{10}$ dɔɔ̃$_{11}$?

'Then$_{1}$ Woru$_{2}$ came$_{3}$ and said$_{5}$, "Sabi, aren't$_{7}$ we$_{6}$ ever$_{8}$ going$_{11}$ to that$_{10}$ place$_{9}$?"' (Here the Q. I. is 'Woru said [to Sabi]'; the direct quotation is from cell M.3$_{34}$.)

It is unusual for one character to be in focus when it is neither the narrator (1) nor audience (2). It is usual, however, when one character is the narrator, for the narrator to be in focus (if 2 is not involved) and to speak with direct quotes; and the other to speak to him with indirect quotes. Focus is likely to be placed on a chief, if a chief and another person (3 and 4) are involved in conversation.

In the reported speech of one character to another in a given on-stage section of a discourse, on the other hand, one of those quotations (one utterance of that character) may be in focus, pinpointed within its Indirect context, and made Direct, for example, if it represents a quotation which became the source of the name of a person or place:

ba$_{1}$ nɛɛ$_{2}$, a$_{3}$ dɔɔ$_{4}$ a$_{5}$ n$_{6}$ dà$_{7}$ dā̃ā̃re$_{8}$ mí$_{9}$ yéyá$_{10}$ ya$_{11}$ ka$_{12}$ Dā̃ā̃ri$_{13}$ mí$_{14}$... wíyá$_{15}$ ba$_{16}$ mɔ̃$_{17}$ Dā̃ā̃ri$_{18}$ yeruma$_{19}$

'They$_{1}$ said$_{2}$, "(You$_{3}$) go$_{4}$ and stay (drop off)$_{8}$ there$_{9}$." So it$_{11}$ was called Danri$_{13}$ there$_{14}$....It-was-he$_{15}$ they$_{16}$ called$_{17}$ Danri's$_{18}$ oldest-son$_{19}$' (Q.I. 'they said [to him]'; Quotation 3-19: Direct, quotation in focus)

On-Stage Quotation Out of Focus

Related criteria affect unfocussed quotations on-stage. When general conversation is out-of-focus, for example, all quotations are indirect.

An incident from history, where the action is more important than the conversation represents this kind of circumstance.

yè$_{1}$ Gɛra$_{2}$ koo$_{3}$ tabu$_{4}$ ko$_{5}$, u$_{6}$ Sabi Nɛna$_{7}$ sɔmɔ$_{8}$ gɔrima$_{9}$, wí$_{10}$ koo$_{11}$
tabu$_{12}$ ko$_{13}$: ù$_{14}$ wi$_{15}$ sè̃ẽ̆nu$_{16}$ kɛ̃$_{17}$

'When$_{1}$ Gera$_{2}$ was going$_{3}$ to make$_{5}$ war$_{4}$, he$_{6}$ sent$_{9}$ a messenger$_{8}$ to Sabi Nena$_{7}$ (saying) that he$_{10}$ was going$_{11}$ to make$_{13}$ war$_{12}$, so would he$_{14}$ (Sabi Nena) give$_{17}$ him$_{15}$ arrows$_{16}$' (Q.I.: 'Gera said to Sabi Nena'; Quotation: 10-16: Indirect, general conversation, out-of focus.)

Of several characters--but usually one of a pair--one may be out-of-focus. The character out-of-focus is quoted indirectly--whereas the character in focus would be quoted directly. In a string of direct quotations, with the string as a whole considered to be in focus, however, extra attention within the larger attention span may be achieved for one direct quotation by making the preceding quotation indirect. (Much as in an italic--emphasized--paragraph, one word may be re-set in Roman type for higher emphasis.)

Although the speech of a chief is normally quoted directly, and the reply to him directly, the following illustration reversed this to highlight the source of the place name:

(a) u$_{1}$ nɛɛ$_{2}$ tamaa$_{4}$ u$_{5}$ koo$_{6}$ bù$_{7}$ gura$_{8}$ ù$_{9}$ ka$_{10}$ doona$_{11}$

(b) wíń$_{1}$ tɔnu$_{2}$ u$_{3}$ nɛɛ$_{4}$, Domma$_{5}$ á$_{6}$ ǹ$_{7}$ dǎ$_{8}$ bu$_{9}$ mɔ$_{10}$? yéyá$_{11}$
ba$_{12}$ ka$_{13}$ mɔ̀$_{14}$ Mɔre$_{15}$

(a) 'He$_{1}$ said$_{2}$ he$_{3}$ thought$_{4}$ he$_{5}$ would$_{6}$ gather$_{8}$ them$_{7}$ and$_{11}$ take them away.'

(b) 'One of his$_{1}$ people$_{2}$ said$_{4}$, "When$_{5}$ did you$_{6}$ not$_{7}$ have$_{10}$ them$_{9}$?" So$_{11}$ they$_{12}$ called$_{14}$ (that place) More$_{15}$.' (Q.I., Sentence 1.: 'He said (to his people)'; Quotation: 3-11: Indirect, on-stage, one quotation out-of-focus, reversal. Q.I., Sentence 2: 'One of his people said to him'; Quotation: 5-10, Direct, one quotation in focus)

FOOTNOTES

[1] Others are ambiguous where the expected contrasts are neutralized.

[2] Primary and secondary are used here in reference to relation to statements. This use differs from that of Section 2.1, in reference to clauses in a clause cluster.

[3] First pointed out in matrix form in the submorphemic (or morphemic) "formatives" of a complicated morphological structure. See K. L. Pike and B. Erickson, 'Conflated Field Structures in Potawotomi and in Arabic,' IJAL 30.201-12 (1964).

Note: Since this analysis was finished (covering text from seven sources, 660 quotations) a second body of text, which included approximately 1,000 quotations, was studied in the light of the hypotheses here. About fifty quotations did not fit the rules. Ten of these were commands. Four were a repeat of a quotation. Five instances of direct form occurred unexpectedly in a second degree quotation; two of these are speeches making up the important point to the story, so that emphasis or focus brought directness into the second degree slot.

Other things being equal, quotations which are written, or are true, are found in indirect form. Quotations which are oral, or fiction, are given in direct form.

CHAPTER IV: NOUNS AND NOUN PHRASES

We have already had occasion to list some kinds of noun phrases, as fillers of the subject slot of clauses (for Dagaari, in §1.3.5) and of other slots (for Vagala, in §1.2). We now wish to see more detail of this type, as well as the structure of the nouns themselves.

4.1 Types of Noun Phrases

For Mbembe, Barnwell gives as the most common types of nominal phrases the following (symbolized in terms of their manifesting classes rather than by their comprising tagmemes):

+ noun ± (+ demonstrative ± particle):	ètèn	!ńdó	sà
	meat	that	there
+ noun + possessive:	ètèn	!cɛ́	
	meat	his	
+ noun ± (± mín:à + numeral):	àn̩ɔ̀ŋ	mín:a	àfà
	people	about	two
+ noun ± qualifier + numeral:	ɔ̀nɔ̀ŋ	kpènáŋkpɛ̀n	àfà
	person	every	two

Less common is a Mbembe time phrase (in appropriate clause slots) with a time word as its head, with optional expansion by a relative clause:

èwù	!ńdó	é!mákwú		mà
day	that	which	they-came	here

or a prepositional phrase, with preposition plus optional noun phrase or pronoun, plus further optional noun phrase:

k̩	ékwɔ̀:r	k̩	ɓsɔ̀:m
to	tortoise	to	house

'to tortoise's house'

The most common Mbembe phrase composites are noun phrases in appositional sequence (or pronoun in apposition to a phrase, or vice versa): or with a coordinating link: or one subordinate (e.g., a relative phrase) to another.

In order to show in more detail the relation of noun phrase types to their distribution in tagmemic slots, however, we return to the Vagala material of Crouch. Classes of phrases are given here. Their distribution in clauses--with some margin of error--was indicated in the chart in §1.2.

NP$_1$ a--

± Pre-Demonstrative	+ Head	± Numeral	± Post-Demonstrative	± Qualifier
pre-demonstrative	noun pronoun	numeral	post-demonstrative	qualifier

zál̀ là máà
hen the all
'the whole hen'

diíní ánè là
houses two the
'the two houses'

à bàlà máà
the elephants all
'all the elephants'

aa--

+ Head	± Numeral	± Post-Demonstrative	± Qualifier
noun pro.	same	same	same

[báàl là] bówl
[man the] village
'[the man's] village'

[ǹ] tágzí là máà
[my] medicine the all
'all of [my] medicine'

[ì] haánà bànè náà
[your] wives two these
'these two wives [of yours]'

[kàlàngkú là] bór là
[peanut the] place the
'[the peanut] place'

[ù] haàn-nánánáná bánè
[his] wives-good two
'[his] two good wives'

b--

+ Head	± Demonstrative
adverbs	same

gúng là [hìng níng éè]
like that [you will do]
'how [you will do]'

gúng là [bàlà ǹ níng daú ú]
how [elephant rel. will put him]
'what [elephant will do to him]'

c--

± Predem.	+ Head	± Numeral	± Post-Demons-	± Qualifier
same	time noun	same	same	same

à sángà
the (that) time

sángà là
time the

à hól !bél
a day one
'one day'

à hól náà
day that
'that day'

d--

+ Head
numeral

báhíná [dú !déy]
some [are there]

[ù káhhúròzí dú] àníy-dànè
[his hats are] seven

[à gà ká] ánè
[they went left] two
'there were two left/they left two'

NP$_2$ a--

+ Relative Head	+ Relator	± Post-Demonstrative
NP$_{1a}$	dep. cl.	post-demonstrative

wif là ǹ dú ù zèé
thing the rel. is its bottom
'the reason for it'

dìá là ǹ kyówlé là
house the rel. fell the
'the house which fell'

b--

+ Relative Head	+ Relator	± Post-Demonstrative
NP$_{1b}$	dep. cl.	post-demonstrative

[yàá ná] !gúng là nùáhíng biéy ǹ dú!wé
[we saw] how dog child rel. is
'[We saw] what the dog's child is like'

c--	+ Relative Head	+ Relator	± Post-Demonstrative
	NP_{1c}	dep. cl.	post-demonstrative

à hól únglà ǹ bálé là
a day the other rel. came the
'the day the other one came'

NP_3	a--	+ Head	+ Relator
		NP_{1a}	directional nouns

[ù zuù] nií là biíynì
[he enter] water the inside
'[he went] into the water'

[bà wà hèyl] kyoòwmá bówl !nuá
[they came reach] rabbit village mouth
'[they reached] the entrance to rabbit's village'

b--	+ Head	+ Relator
	n. sub-class	directional-ní

[gí!zé wà ìyzì] fàngá ní
[don't come get up] strength (with)
'[don't get up] vigorously'

c--	+ Head	+ Relator
	NP_{1c}	directional-ní

[koòwrí nyàng íyzô] kyoòzí ní
[chief again got-up] morning (in)
'[the chief got up] in the morning [as usual]'

d--	+ Head	+ Relator
	adjectives	directional-ní

[ù dú] súm nì né
[it is] sweet emph.

NP$_4$ a--	+ Possessing Head...n*		+ Possessed Head
	NP$_{1a}$	NP$_{1aa}$	NP$_{1aa}$
	kòówrì bíéy [siúwò]		ù háàng nùá
	chief child [died]		his wife mouth
	'the chief's child [died]'		'his wife's mouth'

b--	+ Possessing** Head	+ Possessed Head
	locative	NP$_{1aa}$

[mà zùm] déy nmémèé
[I-neg know] there road
'[I don't know] the road of that area'

c--	+ Possessing Head	+ Possessed Head
	time noun	NP$_{1aa}$ time nouns (?)

kéré kyóozí
tomorrow morning

d--	+ Possessing Head	+ Possessed Head
	adverb	NP$_{1aa}$

[gàlìnggáà wà] gúng ǹféré [féwe]
[crow didn't] such thoughts [think]
'crow hadn't thought like that'

*n here means repeatable without structural limit.

**The terms here are awkward. The noun-noun relation shows parallelisms leading to their being grouped here.

NP_5 a--

+ Coordinate Head	+ Conn.	+ Coordinate Head	± Conn....	± n
NP_{1a}	conn.	NP_{1a}	conn.	NP_{1a}
NP_{4a}		NP_{4a}		NP_{4a}
NP_{3a}				

ù níy ù háàng níy bìyzí [bà díy!wó]
he and his wife and children they ate (something)

únglà ǹ ná !ú dì féylì ngó lùgó bà séní siúwò níy
the-one rel. saw her and first said that their lover died and
únglà ǹ kpá !bá zàn bà là, níy únglà ǹ kpá
the-one rel. took them flew come dem. and the-one rel. took
díyǹg dì lál(i) !ú là...
tail and raised her dem.

'the one who saw her (in his mirror) and first said that their lover died, the one who brought them flying (with his wings) or the one who had raised her from the dead by striking her with his tail [which one should have her]'

b--

+ Coordinate Head	+ Conn.	+ Coordinate Head	± Conn....	± n
numeral	conn.	numeral	conn.	numeral
NP_{1d}		NP_{1d}		NP_{1d}

bàníy dì bànè
five and two
'seven people'

c--

+ Coordinate Head	+ Conn.	+ Coordinate Head	± Conn....	± n
temporal	conn.	temporal	conn.	temporal
NP_{1c}		NP_{1c}		NP_{1c}
NP_{2c}		NP_{2c}		NP_{2c}
NP_{3c}		NP_{3c}		NP_{3c}

zínáà níy !kéré
today and tomorrow

d--	+ Coordinate Head	+ Conn.	+ Coordinate Head	± Conn....	± n
	locative	conn.	locative	conn.	locative
	NP_{4b}		NP_{4b}		NP_{4b}

NP_6	+ List Head	+ List Head	± List Head...	± n
	NP_{1aa}	NP_{1aa}	NP_{1aa}	NP_{1aa}

[dèyní ù kpá!wó rà lá, dì] wòkòzí níy kpòwnàzí, vìbàzí...
then he took cont. go, and yams and yams yams...
'He went and came upon yams [type one], and yams [type two], and yams [type three]...' (Here níy is optional, and not indicated in the above formula.)

Bariba, which differed substantially in clause structure from these other Niger-Congo languages, has a quite similar pattern of noun phrase in subject slot:

Possessive	Noun	Adjective	Numeral	Demonstrative
nɛ́ń	naà	baka	tià	yé
my	cow	big	one	that
'that one big cow of mine'				
sùnɔ́ń	dìì	baka	teè	té
chief	house	big	one	that
'that one big house of the chief's'				

(Compare, above, Vagala type NP_{1aa}.)

4.2. Development of Compound Nouns

We saw in §2.2.5 that subclusters of clauses could develop from clause sequences. Special distributional restrictions, coupled with phonological and semantic specialization led to new complexes in a synchronic view of the dynamic system. To noun phrases a related dynamic process applies, leading to 'subclusters of nouns'--i.e., noun compounds. As was true for the clauses, these cannot easily be treated as a single, uniform structure, since the fusion is not even at every point in the system.

In order to show how this material functions, we move to Igede. The remainder of this section is quoted directly from the report of Mrs. Nancy Bergman, A Note on Degrees of Noun-Plus-Noun Fusion in Igede.

The Problem:

In Igede, certain nouns in sequence were seen to be fusing, with the fused form sometimes having a specialized meaning. Were these fused forms simply following fusion rules which were normal to syntactic phrases, or were they a more closely bound morphological unit? A practical problem was also involved: How should these noun complexes be written--as two words or one?

ùbè + útōjī > ùbútōjī 'clinic'
room medicine

(Notice that the final vowel and tone of the first noun, ùbè 'room', completely elides.)

The Aim:

In view of the setting up of a new orthography, the aim, necessarily, was to determine the difference (if any) between two nouns which are simply following normal fusion rules and two nouns which are more closely bound together as a single unit.

The Approach and Research:

The first step was to locate the different slots in which each noun and each fused form could occur. In other words, in what slots can ùbè 'room', útōjī 'medicine', and ùbútōjī 'clinic' be distributed? Are they found in the same slots or in different ones? This was done to determine the restrictions, if any, on the occurrences of the two forms--the single noun and the fused form. I tested each and found that there was no difference in the slots in which they occurred.

ùbè nyāhÍ dāté	ɔ̄ ŋùlà ùbè
room our different	he to-repair room
'our rooms are different'	'he repaired the room'
útōjī hííìgu	alùbèkéè lá útōjī
medicine good	white-man to-have medicine
'the medicine is good'	'white men have medicine'
ùbútōjī jùwà Ígɛ̄láā	hú n̄yī kà ùbútōjī
clinic be-there in-that-place	to-take child to-go clinic
'the clinic is over there'	'take the child to the clinic'

The following is a list of attested forms:

Igede Noun + Noun Forms

Noun$_1$	+	Noun$_2$	>	Fused Form
ùbè 'room'	+	útōjī 'medicine'	>	ùbútōjī 'clinic'
īmì 'hunger'	+	ēnyī 'water'	>	īmēnyī 'thirst'
ùhyè 'above, on top of'	+	ɛ̀kpà 'bamboo rack' (for storage)	>	ùhyɛ̀kpà 'rack for storage'
ùbè 'room'	+	ʊ̄pʊ́ 'writing'	>	ùbʊ̄pʊ́ 'school'
òhè 'god'	+	ōlùbyè 'it up above'	>	òhōlùhyè 'God'
ābwɔ̂ 'hands'	+	ɛ̄lâ 'matter'	>	ābwɛ̄lâ 'character'
ɛ̄pwā 'house'	+	êjî 'ground'	>	ɛ̄pwêjî 'village'
ʊ̄gbɔ̄ 'train'	+	ōlùhyè 'it up above'	>	ūgbōlùhyè 'airplane'
*ɛ̄nʊ̄ 'afternoon sun'	+	ʊ́tʊ̄rʊ̄ 'morning'	>	ɛ̄nʊ́tʊ̄rʊ̄ 'day'
īyō 'meat'	+	ēnyī 'water'	>	īyēnyī 'fish'
īhū 'year'	+	ômû ?	>	īhwômû 'last year'
īhū 'year'	+	ɛ́nyì ?	>	īhwɛ́nyì 'this year'

*(ēnʊ̄, ʊ́tʊ̄rʊ̄, and ɛ̄nʊ́tʊ̄rʊ̄ are all time words so they have certain restrictions in the slots wherein they may occur)

Once again, notice that in noun$_1$ the final vowel and tone are dropped and are completely overridden by the initial vowel and tone of the second noun.

The next step proved to be very interesting and quite helpful. A test of internal expansion was tried for each of the fused forms. In a noun + noun relationship, only nyâ 'for, of (possessed by)' can occur between two nouns.

Not only do Igede speakers say:

ùbútōjī
room-medicine
'clinic'

but they also say:

ùbè ny(â) útōjī
room for,of medicine
'clinic'

without changing the meaning.

In applying this test to the other fused forms, it was discovered that some could be expanded (by nyâ) and some could not. Table I shows this. (The x indicates tested permitted occurrence.)

TABLE I: Expansion and Non-Expansion of Igede Fused Forms

Fused Form		± nya 'for, of'	-nya 'for, of'
ùbútōjī	'clinic'	x	
Īmēnyī	'thirst	x	
ùhyɛ̀kpà	'rack for storage'	x	
ùbʊ̄pʊ̄	'school'	x	
ɔ̀hōlùhyè	'God'	-	x
ābwɛ̄la	'character'	-	x
ɛ̄pwêji	'village'	-	x
ʊ̄gbōlùhyè	'airplane'	-	x
ɛ̄nʊ́tʊ̄rʊ̄	'day'	-	x
īyēnyī	'fish'	-	x
Īhwômû	'last year'	-	x
Īhwɛ́nyì	'this year'	-	x

Now we ask: Why this difference? What is the controlling factor here? It seemed apparent that there were differences in degrees of fusion in the Igede noun + noun relationship. Following this hypothesis, four degrees of noun fusion were set up: (a) obligatory absence of fusion, (b) optional fusion, (c) obligatory fusion$_1$ (with identifiable morphemes), and (d) obligatory fusion$_2$ (some parts unidentifiable).

(a) Obligatory absence of fusion. The loosest type of noun + noun relationship in Igede is found with certain nouns which cannot fuse and which have the obligatory particle nyâ occurring, which usually denotes a genitive relationship.

ɔ̄nyī nyâ Job ~ ɔ̀jè ny(â) ɔ̄lɛ́ŋ̂
child of Job bicycle of man
'Job's child' 'the man's bicycle'

(b) Optional fusion. This type of noun + noun relationship is made up of a set of nouns which fuse but which also can be expanded without changing the meaning.

Īmēnyī ~ Īmì ny(â) ēnyī
hunger-water hunger for water
'thirst' 'thirst'

ùbʊ̄pʊ́ ~ ùbè ny(â) ʊ̄pʊ́
room-writing room for writing
'school' 'school'

In fact, 'room for writing' occurs more frequently than 'room-writing', which may be an indication that the form with nyâ used to be the prevalent form, but through the years fusion has become more dominant.

(c) Obligatory fusion$_1$. In this type of noun + noun relationship there is a very strong degree of fusion; obligatorily so, in fact. These fused forms cannot be expanded, but the morphemes constituting the forms are still recognizable and definable by informants (see also, the preceding list for the full forms of the fusing nouns).

ābwɛ̄lâ ɛ̄pwêjì
hands-matter house-ground
'character' 'village'

There is wider divergence from the meaning of the source morphemes when there is a tighter degree of fusion. That is, when two nouns fuse, the meaning of the whole is often quite different from the meaning of the nouns as separate forms.

It was suggested that the vowels of these fused forms be considered in hope that this would give a clue to a controlling factor in optional fusion and obligatory fusion. This was done and the results are in Matrix I.

MATRIX I: Relationship of Vowels to Optional Fusion and Obligatory Fusion

Final Vowel of Noun$_1$	Initial Vowel of Noun$_2$	± nyâ	- nyâ
-è	ʊ́-	x	
-ì	ē-	x	
-è	ɛ̀-	x	
-è	ʊ̄	x	
-è	ō-	-	x
-ɔ̂	ɛ̄-	-	x
-ā	ê-	-	x
-ɔ̄	ō-	-	x
-ʊ̄	ʊ́-	-	x
-ō	ē-	-	x
-ū	ô-	-	x
-ū	ɛ́-	-	x

Of the nouns considered in this Matrix, optional fusion occurs only when the final vowel of the first noun is a front vowel. This occurs, as is seen in the upper section of the matrix, in the fused forms, which can be expanded.

Obligatory fusion occurs when the final vowel of the first noun is a central or back vowel (notice the one exception, which is front vowel plus low, back vowel; it is shown between the two main sections of the matrix). Also notice that these forms are the ones which can not be expanded.

(d) Obligatory fusion$_2$. Finally, the tightest degree of fusion in the Igede noun + noun relationship is considered, where:

(i) there is no separate occurrence of the morphemes, and

(ii) the semantics of some morphemes cannot be determined by most informants (but source in noun + noun pattern is assumed).

Īhwômû	Īhwɛ́nyÌ
year-?	year-?
'last year'	'this year'

The informant tried to attach a meaning to ɛ́nyÌ and ômû but he was inconsistent, particularly with ômû; and since we have not gotten any meanings from previous informants, my conclusion is that no one is really sure of the meanings any more. This could also be an indication that change is taking place in Igede towards not only a dominance of fusion but also towards obligatory fusion. In the first three types (obligatory absence of fusion, optional fusion, and obligatory fusion$_1$), the morphemes are still recognizable and definable--but in the last type this becomes extremely difficult.

Conclusion.

My conclusion and solution to the problem, therefore, is:

(1) Types (a) and (b) are phrases and should be written as sequences of separate words.

(2) Types (c) and (d) are compounds and should be written as single words.

4.3. Syntactic Markers Developed from Nouns

Just as independent verbs sometimes developed into restricted auxiliaries or particles (§2.2.6), furthermore, so regular freely-distributed nouns may develop into particles or into special word classes marking other syntactic functions. For illustrating the synchronic discovery and functional description of this dynamic state, we turn back to Vagala, with data from Crouch:

In Vagala a large list of nouns may occur with or without accompanying modifiers or other compounds of noun phrases. Note, for example, dìá 'house' in the phrases:

dìá là   díní ánè   là
house that   house two those
'that house'   'those two houses'

dìá   là   ù   ǹ má!wé   là
house that he which built that
'the house which he built'

A locative element may optionally follow a noun phrase with locative-noun head (e.g., dìá 'house') in locative slot; but is required in locative phrases with nonlocative head (e.g., màá 'mother'). Compare the phrase after transitive verb ná 'see', ù ná ù màá là 'he saw his mother that', with a locative phrase after a verb of motion là 'go,' ù là ù màá là bèéy 'he went [to] his mother's vicinity'.[1] Note that the marking locative can also follow a fuller noun phrase:

ǹ lá   díní   ánè là   séèy
I went houses two those front
'I went to the front of those two houses'

We are assuming that the locative marker is in immediate constituent relation to the rest of the phrase. Whereas the demonstrative and numerals are considered to be modifiers of the noun phrase head, the locative is considered to be in exocentric relation to the phrase as a whole, even though it is optional as seen by the preceding footnote.

Three observations must now be made about the list of locatives:

(a) In general this list is made up of body parts: nùá 'mouth', hàrbòó 'back', séèy 'front', biíynì 'inside', zèé 'bottom', báng 'middle'.

(b) The locative marker picks up its special meaning from its tagmemic function.[2]

(c) In addition, however, there are two or more morphemes in the class, which have locative meanings, and serve as locative markers in the same construction but which do not occur as free nouns elsewhere. Unlike 'mouth', 'back', etc., which can occur as subjects or objects in ordinary clauses, these other morphemes are found here alone. Thus one can say that ǹ nùá rá !wíì 'my mouth hurts' or ù ló ǹ nùá 'it hit my mouth', but one cannot use in these positions either ní 'on, vicinity', or béy 'to, presence'. Nevertheless one finds ǹ lá dí'á là béy 'I went house that presence (I went to the house)' with béy, and ù sòwgó ká'rá là ní 'he sat chair that vicinity (he sat on the chair)' with ní. We conclude, then, that there is a specialized subset of nouns, identified by the fact that most of them occur as nouns in subject and object slot. But they are a specialized subset in that they have a semantic central meaning, in general (body part) with a tagmemic overlay of meaning (direction). As members of this class, however, there are two elements to be analyzed as nouns, on the basis of analogy with the other members of the class, even though they occur here alone. The resulting assumption is that these two morphemes béy and ní should be treated as nouns with restricted distribution; and that one should be able to find them as regular nouns in some related dialects.

4.4. Irregularities Within Noun Classes as Distortion of Field

Turning now to the structure of a nominal system, we find in a large number of Niger-Congo languages a difference in stems according to vowel harmony--in which the vowels are paired into 'upper'[3] (close) or 'lower' (open) sets. The upper set, under certain circumstances, determines the selection of a member of the comparable set in an accompanying word or affix.

The relations between the variant forms may be expressed by morphophonemic rules or by prosodic formulas of a Firthian type, or by rules.

For this project, however, John Callow (who had previously[4] explored three alternatives) tested a presentation of Kasem data via matrix display. A small sample of his results are given here. (For further material, see Appendix.)

The first sample displays a simple relation between a chart of patterns of Kasem noun stems, chosen because they comprise a class ending in d, but arranged in two halves. The upper half of the chart includes stems which contain upper vowels, placed in the order the vowels would come on a vowel chart. The pattern of arrangement of the lower half of the chart as a whole is repeated, but with stems containing lower members of the paired vowels. The stem-initial consonant is irrelevant to the structural relation, and is represented by C. To the right is the word form, composed of the respective stem shape plus the 'singular' morpheme, with allomorph /ə/ after upper-harmony stems, but the allomorph /a/ after lower harmonies.

KASEM MATRIX I: Nominal-Group C, with d-final Stems

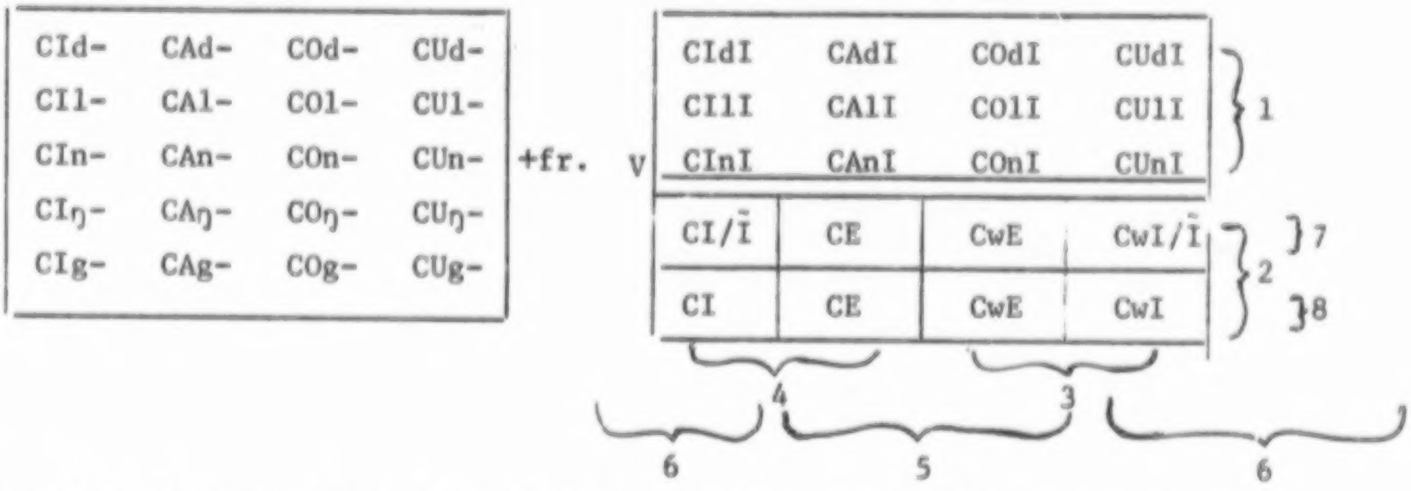
	d-final stems				d-final stems, Sg. form		
Upper Harmony	Cid-		Cud-		Cidə		Cudə
	∅	Cəd-	Cod-	+ cen.V 'singular'	∅	Cədə	Codə
Lower Harmony	Cɩd		Cʊd-		Cɩda		Cʊda
	∅	Cad-	Cɔd-		∅	Cada	Cɔda

The ∅ signifies systemic non-occurrence, i.e., /e/ and /ɛ/ cannot occur in stems of this general shape.

No startling results come from one simple chart of this kind. But it lays the groundwork for compacting rules via matrix patterns. If, for example, the upper left were to be written as N^u-d (noun of upper harmony, final consonant) versus N^{ℓ}-d, the rule N^u-d + {ə}N^u-d+ə ~ N^{ℓ}-d + a points toward a device in which units become symbols of matrices--with a potential compacting value.

Secondly, when the pattern does get complicated, and crisscrossing, a geometric display via matrices allows (for analyst and reader both) much faster and easier insight into the pattern. Note, for example, Callow's matrix rule for the plural. Here, however, the vowel-harmony character of the preceding matrix is assumed; capital letters of stem and affix represent either upper or lower harmonics, as the stem may dictate.

KASEM MATRIX II: Plural, Nominal Group C, Consonant-final Stems



CId-	CAd-	COd-	CUd-
CIl-	CAl-	COl-	CUl-
CIn-	CAn-	COn-	CUn-
CIŋ-	CAŋ-	COŋ-	CUŋ-
CIg-	CAg-	COg-	CUg-

+fr. V

CIdI	CAdI	COdI	CUdI
CIlI	CAlI	COlI	CUlI
CInI	CAnI	COnI	CUnI
CI/Ī	CE	CwE	CwI/Ī
CI	CE	CwE	CwI

By use of the braces, pairs of sub-groups can be shown: (1) the set of stems ending in alveolar consonants; these have no variants in the plural; versus (2) stems ending in velar consonant; the consonant is lost in plural. (3) Stems ending (a) in velar consonants and (b) containing rounded vowels; the vowel is replaced by /w/, versus (4) stems ending in front or central vowel; the vowel is lost. (5) Stems (a) ending in velar consonants, (b) containing low vowels a, ɔ (central or back); the plural allomorph is the low front vowel (in open or close harmony); versus (6) stems (a) ending in velar consonant but (b) with high vowel; the plural allomorph is the high front vowel. (7) Stems (a) ending in velar nasal consonant; (b) included in previously-mentioned set (6), (i.e., with high vowel); the suffix vowel alternates freely from oral to nasal quality; versus (8) stems (a) ending in velar stop, and (b) included in (5) and (6) above; no further criterion; hence those paired members of (7) and (8) are ambiguous except when (in 7) the freely-variant nasal vowel differentiates them.

Some Kasem examples:

bidə	'wall'	bidi	'walls'
jιŋa	'hand, arm'	jι/jῐ	'hands, arms'
digə	'room'	di	'rooms'
bəkədə	'boy'	bəkədi	'boys'
bəŋə	'beam'	be	'beams'
yaga	'market'	yɛ	'markets'
kodə	'voice'	kodi	'voices'
coŋə	'path'	cwe	'paths'
kɔga	'back'	kwɛ	'backs'
tulə	'granary'	tuli	'granaries'
zʊŋa	'calabash'	zwι/ῐ	'calabashes'

The total structure of such a system of relations may be considered as a field, or subfield. Regular groupings lead to a regular field structure. Irregularities, such as these of Kasem, may be viewed as distortions of the regular field. A complicated matrix structuring is seen in the verbs--for which see the Appendix.

4.5. Noun Concord

In the preceding section we saw that noun classes differ in some Niger-Congo languages, according to their forms in singular versus plural, determined by the shape of stem, shape of the singular versus plural suffixes, and morphophonemic fusion rules within the word.

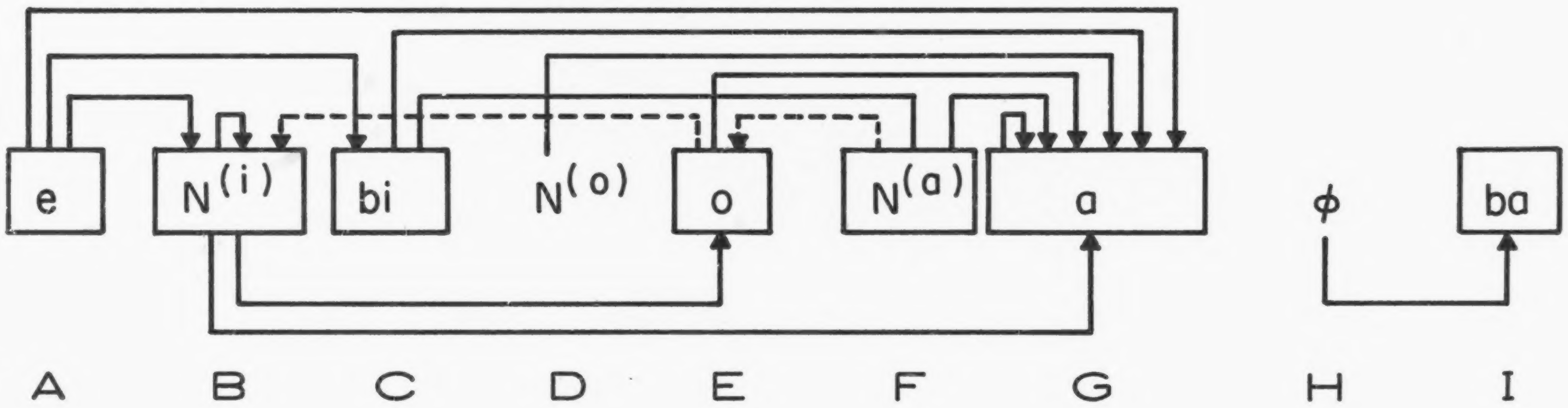
4.5.1. Ranking in Singular-Plural Prefix Pairs

When, now, we turn to the Etung, of the Bantoid[5] group of West Africa, we find not only singular-plural stem and affix differences, but two further extensive phenomena. (1) The concord-agreement between the noun and other words in the immediate noun phrase, and between the noun and some other tagmemes in the clause; (2) a system--well-known for Bantu--in which (a) some particular prefix--or 'formative[6]' --(e.g., /e/), used for singular, forms a pair with a corresponding prefix (e.g., /bi/) used for plural with that same stem; whereas (b) on a different stem, the same prefix used earlier for plural may now appear as marker for the singular, now paired with a different prefix to mark the plural of this second stem; etc. (c) The morphophonemic changes or suppletive replacements (or correlative formatives of a concord set) undergone by any one prefix throughout the concord patterns is the same whether it applies to its use as singular or its use as plural, or whether paired with one or more shapes for different stems respectively.[7]

The following analysis and presentation of the Etung concord is prepared in collaboration with Mrs. Eileen Edmonson. (For her extensive list of noun stems according to overlapping singular-plural pairings of prefix shapes, see Appendix.)

A striking insight of Edmonson added a further characteristic to the list of those already mentioned: (d) There are patterned constraints (a ranking) on the permitted pairings of prefix shapes: Some prefixes are allowed to occur much more freely than others; and the occurrence-possibility forms a 'ranking' series such that--to some degree--if the first prefix pairs with the second (in singular to plural relation), or with the the third, or fourth, then the second may be expected to pair with the third and fourth, while the third may be expected to pair with the fourth. The system is not as clean-cut and regular as such a model implies, however, so the data are presented in Etung Figure 1.

Arrows connect the prefixes--with the arrow head indicating the plural form of the pair. Arrows above the line refer to countable nouns, which may be found with numerals in the plural. The dotted shaft shows movement form right to left in the chart--with only two pairs, both involving o. An arrow completely over a prefix indicates that certain stems use the same prefix in singular and in plural. Arrows beneath the prefixes have nonmodified plurals as indicated--but when accompanied by numerals, the plural words use the prefix which otherwise



Etung Figure 1

would be singular. Certain mass nouns do not occur in numerical plural contexts; the contrast between singular and plural is neutralized; a prefix which occurs with a set of these nouns is surrounded by a box in the figure.

A crucial question: What controls the ranking order--and the gaps? The vowels from left to right in Figure 1 (from A to J) divide roughly into two halves--the vowels /i/ and /e/ which are obviously front versus the vowels /o/ and /a/ which, in contrast to /i/ and /e/, may be called back. The ranking movement from singular to plural is in general from front toward a position farther back. There are some departures from this condition, as /e/ outranking /i/, and as /o/ is involved in the only instance of a back vowel singular paired with a front vowel plural. The pair {Ø} and /ba/ are outside the basic system, used only with certain loans.

A second problem involves the identification of the vowel coloring of the three homophonous nasal prefixes. In this instance, the vowel color is found in other elements of the concord series. In Etung Table 1, rows are labelled from A to J (from Figure 1), but the order has been changed to bring closer together concording sets which share various tonal, vocalic, and consonantal characteristics.

ETUNG: TABLE I

Concording Sentence	Noun 'X'	his	that	one	which	it-fell	I-have seen	it
Noun Class								
D 'wife'	ǹkáé	òwě	áñò	yót	ǹñò	à-gbòé!´	ń-yèn	yê
B 'box'	ǹkǒp	èyě	áñì	yɨt	ǹñì	à-gbòé!´	ń-yèn	ńñî
H 'bucket'	pókìt	èyě	áñì	yɨ́t	ǹñì	à-gbòé!´	ń-yèn	ńñî
A 'yam'	èyù	èjê	ánjì	jɨ́t	ǹjí	é-gbó!é	ń-yèn	ńjî
C 'stick'	bítí	èbê	ámbì	bɨ́t	m̀bí	bí-gbó!é	ń-yèn	ḿbî
E 'broom'	òfâk	òbê	ámbì	bɨ́t	m̀bí	ó-gbó!é	ń-yèn	ḿbî
F 'pestle'	ǹčôk	àmê	ámà	mát	m̀má	ḿ-gbó!é	ń-yèn	ḿmâ
G 'needle'	àgà	àmê	ámà	mát	m̀má	á-gbó!é	ń-yèn	ḿmâ
J 'buckets'	bàpókìt	àmê	ámà	---	m̀má	á-gbó!é	ń-yèn	ḿmâ

Note, in the first row (D) that the vowel /o/ occurs in the second, third, fourth, and fifth columns--and implies the /o/ color to the simple nasal /ǹ/ in the first column. Row F, on the other hand, has /a/ in the comparable places of the same columns, and in Column 8 as well, giving /a/ color to prefix /ǹ/ of F. In Row B, /i/ occurs in Columns 3, 5, 8 (with front /e/ in 2.)

Other phonetic elements--or the front-back contrast recurring--enter deeply into the structure here, or in related data. Discussion of them must wait for a fuller paper.

This much, however, has alerted us to watch for source of these phenomena, or reflexes of them, as we study related languages.

Footnotes

[1] Unless one knows whether a verb is trasitive or intransitive, certain ambiguities may develop. Certain verbs of motion may be followed by an unmarked locative, as ù lá dí·á 'he went house'. The subset of unmarked locative phrases does not concern us further here.

[2] A very similar typological situation has long been known elsewhere. Note, from Mixtec, a similar set ('Analysis of a Mixteco Text,' *International Journal of American Linguistics*, 1944, *10*, 113-138). As in Vagala, the Mixtec data includes a couple of items ('road' for 'direction toward' which do not fit the body part class.

[3] See §7.7 for discussion of phonetic analysis of this difference.

[4] In 'Kasem Nominals, A Study in Analysis,' *The Journal of West African Languages*, 1963, *2*, 29-35.

[5] See Greenberg's Class IA5d, as in Introduction, above. David W. Crabb, in Ekoid Bantu Languages of Ogoja, Part I (Cambridge, 1965), asserts with more detailed data that the Etoid group is part of the Bantu family.

[6] I use the term formative when I wish to emphasize that there is identity of phonemic shape, but when I do not wish to commit myself to morphemic identity in the classical sense of morpheme as a relatively stable form-meaning composite. Thus, the same formative can be either singular or plural.

[7] Note that the phonologically-alternate manifestations of the formative must be treated in the concord series, whether or not the formative is considered as the same morpheme both as singular and as plural.

CHAPTER V: VERBS

A crucial problem in describing verb structures of some of the Niger-Congo languages of West Africa lies in the control which the prefix complex exerts over the shape of the verb as a whole, combining with an intricacy of fusion of elements within the prefix itself. Into a monosyllabic prefix are jammed clues to a variety of tenses (or aspects), modes, persons, and contrasts for positive versus negative. I shall choose two sets of data from the workshop in order to highlight, in turn, problems of vowel fusion (in Abua), and tone spans (in Etung). Then I shall add discussion of some comparable problems of a Semitic language (Hausa) of this general geographical area.

5.1. Vowel Fusion in Matrix Display

Ian and Amelia Gardner have provided us with data on the structure of some fifteen prefix forms of Abua. Matrix I lines up the data in order to bring together into single blocks, insofar as is feasible, like vowels of the respective prefix complexes.

Note that the vowels, in contrastive columns, differentiate

MATRIX I: ABUA VERB PREFIXES
(when no independent pronominal object
follows the verb)

Subject Pronoun →		C,T	2 Pl	3 Pl	3 Sg	3 Sg	2 Sg	1 Sg	3 Pl	1 Pl	1 Pl
Tense ↓	Quality ↓		ñínạ	Nonhuman ịdị	ịdị	ọ̀dị́	ná	mị̀(ˋ)	bị̀dị́	Excl. yóor	Incl. yírà
B Future	+	kˋ	e	e	e/a	a	a	a	o	o	o
C Future	-	kˊˊ	e	e	e/a	a	a	a	o	o	o
D Present	+	rˋ	e	e	e/a	a	a	a	o	o	o
F Present	-	rˊˊ	e	e	e/a	a	a	a	o	o	o
G Completive	+	ˊ	e	e	e/a	a	a	a	o	o	o
H Perfect	+	mˊ	E	E	E/A	A	A	A	O	O	O
J Imperative	+	ˋ	iˊ	E	E/A	A	ø	uˊ	O	O	O
K Participial	+	rˋ	E	E	E/O	O	O	O	O	O	O
L Stative	+	ˊ	E	E	E/O	O	O	O	O	O	O
M Stat./Perfect	-	kˊˋ	E	E	E/O	O	O	O	O	O	O
N Stative/Past	-	ˊˊ	iˋ	i	i/Oˋ	Oˋ	Oˋ	uˋ	u	u	u
P Conditional	+	mˋ	i	i	i/u	u	u	u	u	u	u
O Conditional	-	mˋ	i	i	i/u	u	u	u	u	u	u
R Imperative	-	kˊˊ	e	i	i/u	u	a	u	u	u	u
S Past	+	ˊ	Ì	I	I/A	A	U	Uˋ	U	U	U

some of the persons: e characterizes second plural and third plural nonhuman, in "tenses" (rows) B-M; the vowel i in tenses N-S (but with i, e, reversed in second plural J and R). The vowel a is found in tenses B-H, versus o in K-M, u in P-Q (and mixture in J, N, R, S) for third singular human, and for first and second singular. Similarly, o and u occur with 3 plural human, and first plural inclusive and exclusive:, whereas third singular nonhuman has alternate forms for e/a, e/o, i/u, and i/a.

Several other elements must be understood on the matrix before illustrations can be matched against it: 'Quality' refers to positive (+) (i.e., affirmative) and negative (-); this affects the consonant and tone frequently, but the vowels (as in J, R) less often. The consonants of the prefix are often contrastive for tense (e.g., B versus D). The vowels sometimes differentiate "tense" (e.g., N-S versus B-M), as well as simultaneously[1] differentiating person (e.g., the vowel i signals rows N-S, and columns 2pl and 3pl nonhuman). All vowel letters are morphophonemic symbols, representing vowel harmony with vowels of the verb stem. Vowels in capital letters are predictive morphophonemic symbols indicating that the following consonant of the stems of Class 2 verbs--but not the vowel itself--will be changed. In a Class 2 (but not Class 1) verb, the stem-consonant will be replaced by w after I, U, but by zero and vowel length after E, A, O; p replaced by ƀ, t by r, k by g.

We leave for the moment the tone contribution to the verb so as to continue studying the vowel patterning. Abua Matrix 2 shows what happens to any one vowel quality of Matrix 1 when the verb is accompanied by an independent object pronoun. (In positive sentences, the pronoun object usually follows the verb; in negative sentences, it usually precedes it.) Vowel harmony continues to operate between verb prefix and stem. Capital letters, in Matrix 2, again predict consonantal morphophonemics.

There is an astonishing degree of regularity in the fusion of the old included object element to these non-object vowel forms. There are few exceptions to the implications of Matrix 2:

MATRIX 2: VOWELS OF ABUA VERB PREFIXES
(when an independent pronominal object
accompanies the verb)

Object Pronoun → Verb prefix vowel from Matrix I ↓	2 pl íñìną̣	1 pl Excl. íyòor	1 pl Incl. íyìrą̣	1 sg į́mį̀	2 sg ñį́nạ̀	3 sg ñǫdį́	3 pl bį̀dį́
i	I	I	I	I	i	i	i
e	I	I	I	I	E	e	e
u	I	U	U	U	u	u	u
o	I	U	U	U	O	o	o
a	I	U	U	U	A	a	a

Note the i- prefix in the independent object pronouns 2pl, 1pl incl, 1pl excl, at the top of Matrix 2: í-ñìną̣ '2 pl', etc. Only when the independent object pronoun has this high front prefix does change take place in the fusion matrix: no change occurs with 2 sg, 3 sg, 3 pl. A similar *i- element seems to have occurred within the verb itself. There i + i > i; i + e > i; and i + u,o,a > u except in 2 pl when i + u,o,a > i. The *i-, that is, raises front and back vowels, and also fronts the central and back vowels except in 2 pl.

This in turn leads in Matrix 2 to the display which shows i outranking u, and u outranking o and a, resulting in the characteristic L shapes. Returning to Matrix 1, an included ranking structure is seen in the relation of o to a in Rows B-M of the columns to the right. The source of such ranking structures, in instances of this kind, seems to be priorities in fusion. The result is sometimes ambiguity. Ambiguity is not as great as appears from Matrix 2 alone, however, since the consonant differences of Matrix 1 continue in force, and the tone differences also contribute to the contrasts.

5.2. Tone Pattern in Verbs

The tone of the Abua verb as a whole is determined by (1) the inherent tone of the last syllable of verb stems, (2) by the length of vowel in the prefix (not discussed here), determined by the stem, (3) by the number of syllables in the stem-plus-suffix complex[2]; (4) by the tone of the prefix complex (see in Column C̨T of Matrix 1), (5) by presence of pronominal object in the context, (6) by position of verb in primary or secondary place in a cluster;

(1) Although stems in Abua verbs differ contrastively by tone, these inherent differences are relevant only to the present positive--Row D--and only to the last syllable of the verb; e.g., for bulạ́ 'to forget' versus tụgẹmị̀ 'to teach'. (All other rows of Matrix 1 of Abua have inherent stem tone completely overridden by patterns determined by the following features.)

(2) Some stems require a long vowel in the prefix, and a different set of tone patterns on stem-plus-suffix, conditioned by the prefix.

(3) The tone pattern of polysyllabic stem-plus-suffix is in two parts: (a) the final syllable and (b) all other syllables. The final syllable carries one tone, and the balance a second tone (with each syllable of the balance having that second tone repeated). In monosyllabic elements of a comparable type, the two tone parts are often fused on the one syllable, often with a resultant glide, but occasionally the fused form is not the same as the longer form compressed.

(4) The prefix complex carries its own contrastive tone, as well as determining the contrastive tone of the verb pattern as a whole.

Some typical patterns of the total Abua complex can be given, keyed into the rows of Matrix 1. Tones will be labeled T (top, special tone in negative only), H (high), L (low):

TONE PATTERNS OF ABUA VERBS

Tense Complex	Short-Vowel Prefix Tone	Polysyllabic		Monosyllabic
		Medial Tone	Final Tone	Fused Tone
D	L	...H	varied	varied
F	T	...L	H	LH
H	H	...H	L	L
M	HL	...L	H	H
S	H`L	...L	H	H
Stems requiring a long-vowel prefix may have contrastive patterns:				
F	TL	L	H	H
H	H	L	L	L
S	HL	L	H	H

Sample verb forms are now given to illustrate both the Abuan tone elements mentioned, and the vocalic and consonantal elements of Matrix 1:

Tense D, present positive:

ñínạ̀	rè-búlạ́	'You are-forgetting'
ẹ̀nụ́n	rè-búlạ́	'The-bird is-forgetting'
ọ̀dị́	rạ̀-búlạ́	'He is-forgetting'
bị̀dị́	rò-búlạ́	'They are-forgetting

Tense F, present negative (with ˝ as top tone):

ñínạ̀	ře̋-bùlạ́	'You are not-forgetting'

Tense G, completive positive:

ñínạ̀	é-!léghérì ní	'You know'

Tense H, perfect positive:

ñínạ̀	mé-ghị̀	'You have-gone'

Tense Q, conditional negative:

ñínạ̀	mị̀-kị̋	'You would-not-have-gone'

(5) Presence of an independent pronominal object in the clause sometimes modifies the tones further. We have already seen that an *i- comparable to that of the pronoun seems also to have been fused to the verb prefix complex. A related fusion appears with the high tone of that *í-, also carried into the verb prefix. (In addition, although the pronoun ñínạ̀ '2 sg' lacks the prefix i-, it does have the high tone--and this tone is found fused into the prefix complex.) Contrast

ị̀gâ rèbúlạ́ 'The goats are forgetting'

with

ị̀gâ ríwùlạ̀ íñìnà 'The goats are forgetting you'

in which both prefix tone and prefix vowel are changed--and the final high stem tone is also lowered. If the verb-prefix vowel is i, however, the tone change does not occur:

ñínạ̀ ìbű́lạ̀ 'you did not forget'

ñínạ̀ ìwű́lạ̀ íyòòr 'you did not forget us'

Nor does tone change occur when the verb prefix itself has high tone.

For Etung, materials are abstracted from data and presentation provided by Tom Edmondson. There is a highly intricate chain of interdependencies in the tone of the Etung verb. Certain (indicative) prefix tones affect other (pronominal) prefix tones (preceding them), and the stem tone. Overt tense suffixes affect the tone of the verb stem; the stem-suffix combine is closely enough integrated to warrant a special term--the verb 'core'. Covert (fused) tense suffixes are actualized as tone changes of verb stems. (Tone patterns of the core are distributed over the core, with the last syllable of a core carrying one tone or one tone complex, and the other core syllables all carrying the other tone of the pattern.) The tone class of a suffix, mediated by the tone class of the core, may affect the tone of the prefix. The tone of a prefix occasionally affects the tone of a suffix. The whole verb, therefore, comprises a close-knit but contrastive chain of tones. We can only give brief illustrations here. For patterned details, see the Appendix.

(Indicative) Prefixes affecting other (pronominal) prefixes:

à-kî-gùré	'He is selling'
á-ꜝmó-gùré	'He won't sell'

Here a 'he' is raised before the future negative ꜝmo.

(Indicative) Prefixes affecting stems:

á-ꜝmó-gùré	'He won't sell'
á-ꜝmó-ꜝbómé	'He won't put on'

Here the Class A stem gùré is low-high in tone, whereas the Class B stem has lowering influence plus high high. All other Class A and Class B stems would act like these, after ꜝmó. The indicative prefix may affect a following repetitive prefix (as if it were a Class B stem) which in turn affects the stem. (For this, and patterns after other indicative prefixes, see Appendix.)

Overt suffixes affect the tone of the stem, leading to an over-all pattern for the core:

à-bóme̖	'He put on'
á-bòm-á	'He puts on habitually'

The CVCV stem bóme̖ loses its final vowel, replaced by the suffix -á; and the high-low pattern is reversed.

Suffix affecting prefix:

ǹ-sǔ-k	'I have been washing'
ń-sǔ-k	'I wash'

The tense labelled by Edmonson past habitual -k contrasts, over the total verb (seen here in the low prefix), with the present habitual (seen with high prefix). The tone classes of these suffixes differ arbitrarily but morphophonemically, at this point, in their effect on the prefix.

Prefix affecting suffix:

á-sú-k	'He washes'
á-sú!´-k	'They wash'
à-sǔ-k	'He has been washing'

The first two illustrations share the present habitual tense, but differ in their pronominal prefix. The phonological contrast arising from change of prefix, however, is manifested in the core. The third illustration, changing tense to past habitual, again shows contrast of total word, but with the pitch of the pronoun actualizing the difference; in the first illustration, the fused suffix raises the tone of à to á.

The interlocking of various parts of the verb with one another, in tonal relations, raises a question: How can one visualize the mechanism by which this has arisen? And can an alternate descriptive device aid in understanding of the synchronic system? I wish to suggest one kind of answer, but this must be delayed until after certain tone matters have been discussed from a different viewpoint in the phonology chapter. (See §6.4 where I shall suggest a left-to-right ordering of rules of fusion, with a morphophonemic raising influence--as well as down-step phoneme--to handle some of these details.)

5.3. Hausa (Afroasiatic) Formatives in Person-Aspect Markers

In §1.6 certain clause characteristics of Hausa, a Chad language of West Africa, were given in order to show how properties of syntax can be compared. Likenesses and differences within a region can thereby be discussed, as over against the family likenesses. Similarly, for the same Chad language, I now wish to point out that techniques of matrix arrangement, with permutation of rows and columns, allow interesting possibilities of abstracting formatives, for contrast or comparison with the Niger-Congo materials. Here, again, I use the work done for me by Gisela Kappler, based on data of Abrahams and others (see fn. 14, Chapter 1). Kappler first points out that the aspect-pronoun complex (seen in syntactic context in §1.6 above) is very intricately structured. Within it, a bewildering interlocking of components fuse into irregular patterns of contrastive prefix, suffix, tone, length, consonant, and vowel to signal negation, time, aspect, syntactic function, person, number, gender. In order to show some of the near-regularities buried within the larger mass, she abstracts a chart (see Hausa matrix of pronoun-formatives) which gives only the nuclear syllable of the aspect-pronoun complex of the verb phrase (eliminating prefixes and suffixes from the complex, and deleting also length and tone from it, and omitting independent pronominal forms).

HAUSA MATRIX OF CERTAIN ABSTRACTED PRONOUN-FORMATIVES

	pl.^{1}	pl^3	pl^2	sg^{2f}	sg^{2m}	sg^{3f}	sg/pl^4	sg^{3m}	sg^1
Future	mu	su	ku	ki	ka	ta	a	i	n
Neg. Future	mu	su	ku	ki	ka	ta	a	i	n
Neg. Perfective	mu	su	ku	ki	ka	ta	a	i	n
Progressive	mu	su	ku	ki	ka	ta	a	ya	n
Optative	mu	su	ku	ki	ka	ta	a	ya	n
Neg. Progr. 2	mu	su	ku	ki	ka	ta	a	ya	ni
Perfective	mu	su	ku	ki	ka	ta	a	ya	na
Relative Perf.	mu	su	ku	ki	ka	ta	a	ya	na
Rel. Progr.	mu	su	ku	ki	ka	ta	a	ya	na
Habitual	mu	su	ku	ki	ka	ta	a	ya	na
Neg. Habitual	mu	su	ku	ki	ka	ta	a	ya	na
Neg. Progr. 1	m^wa	s^wa	k^wa	k^ya	ka	ta	a	ya	na
Neg. Indefinite Future	m^wa	s^wa	k^wa	k^ya	ka	ta	a	ya	na
Indef. Future	m^wa	s^wa	k^wa	k^ya	ka	ta	a	ya	na

——— encloses a block with u and u w

------- encloses a block with k

.... encloses a block with a

Within this matrix, rows and columns have been permuted to bring together like formatives so that their semantic relations can be more easily studied. The central block, which is determined by k, covers all second persons--singular and plural, masculine and feminine; differentiation among them must be by the vowel formatives. Other consonants signal further persons: nasals for first person, with m for plural and n for singular (think of the matrix as a cylinder, to bring the formatives together); s for third plural; t for third feminine singular, y ~ i third masculine; # for fourth singular and plural.

Crossing this signal set are the vowels: u for all plurals except fourth--and redundantly helping to distinguish first plural from singular; i ~ y for second feminine--with redundant overlap with k as signalling second person in those aspects (first three rows) where i is not found as an alternate of y in third masculine; a as nonplural nonsecond-feminine--but irregularly absent in certain aspects with third masculine (same three rows) and first singular (first six rows). The vowel i without consonant, however, signals (anti-redundantly) the semantic complex of singular third masculine.

Even with this amount of abstraction, complexity of old fusions is implicit. In the last three rows internal reconstruction suggests that a suffix *a plus *ku-gave k^{w}a (although here I seem to have two non-identical sets of data, in one of which the w occurs only after the k in these rows); and *ta- plus the same *-a gave ta. In the early rows of the last column, similarly, the synchronic anti-redundancy is due to n + a > n, and so on.

With the full, non-abstracted data, further layering of nonfusion, partial fusion, and complete fusion need studying. Note, from Kappler's listing, the following full forms of the eleventh row (negative habitual), in the order given on the matrix from left to right: bàmúkàn, bàsúkàn, bàkúkàn, bàkíkàn, bàkákàn, bàtákàn, bàákàn, bàyákàn, bànákàn. Here the addition of bà- 'negative' and -kàn 'habitual' (compare tákàn, 'positive habitual third feminine') seems straightforward. But even here the tones are not so easily treated as this would make them appear. The tone of the nuclear element of the complex is high before a suffix like -kàn (hence bànákàn); but low after a prefix (bà-), when not followed by a suffix, the bà- > bá and the nucleus becomes low, as in bá·sù 'negative progressive$_2$ plural third person'. Yet elsewhere, tone may be contrastive: ká· 'perfective second person singular masculine' versus kâ· 'indefinite future second person singular masculine'. Part of the range of such problems can be seen by illustrating one column of the matrix, the third plural, in the order given there: zá·sù 'future', bàzá·sù 'negative future', bàsù 'negative perfect', súnà· 'progressive', sù 'optative', bá·sù 'negative progressive$_2$', sún 'perfective', súkà 'relative perfective', súkè 'relative progressive', súkàn 'habitual', bàsúkàn 'negative habitual', bà·sù 'negative progressive', bá·sâ· 'negative indefinite future', sâ· 'indefinite future'.

In comparison, now, with the Niger-Congo languages Etung and Abua, this Chad language shares certain typological characteristics: (1) The tone pattern of the aspect-pronoun complex must be treated as a whole, just as the Etung verb tone (§5.2) had interlocking relations from prefix through suffix. (2) The complex of elements, with irregular blocks of formatives, is typologically reminiscent of the Abua verb (§5.1).

On the other hand, repeated warning must be kept in mind that general typological similarity is not evidence for genetic relationship. Details must be reconstructed.

In thinking of utilizing matrix block-shapes for reconstruction purposes, one notes (and see discussion in last reference given in fn. 2 of Chapter 1) that the specific arbitrary shapes in relation to specific category sets must be compared. The basis of classical comparison is the patterned relationships across languages of the arbitrary relations of morphemic form (phonological content) to semantic content (lexical meaning) within a language. An analogous basis for reconstruction of certain morphological patterns would appear to be an equally rigorous application of the comparative method to an arbitrary relation of matrix form (that is, shape of its formative blocks) to matrix semantics (its intersecting categories). General relationship will not do. It is the highly arbitrary detailed relation of form to meaning which, when seen as patterns across languages, should be able (1) to carry conviction of relationship and (2) to be reconstructable.

FOOTNOTES

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[1] The dual semantic role of such a formative I have elsewhere called anti-redundant. See my 'Non-linear Order and Anti-redundancy in German Morphological Matrices' Zeitschrift für Mundartforschung, 32.193-221 (1965).

[2] The suffixes of Abua are not otherwise relevant to our discussion here. Several orders of suffixes--and possibly enclitics--occur.

CHAPTER VI: PHONOLOGY

In preceding chapters attention has been given largely to grammatical matters (or, in §5.2, to morphophonemics). Here I turn to several interesting problems of phonology.

6.1. Quasi-Isochronic Units of an Accentual Hierarchy

In both the Abua and the Etung materials (§5.2) certain rules of tone placement apply to distribution of tone patterns over entire stems, whether one or more syllables were involved. It seemed to me improbable that such control would take place unless a larger phonological unit of some type were a setting within which these rules could be operative. In Basare, work in collaboration with Monica Cox led to the postulation of quasi-isochronic feet which were in some sense simultaneously accentual units, and an accentual hierarchy which interlocked with the grammatical hierarchy but was not identical with it.

Within a unit substantially larger than a word--a clause, for example--replacement of one word by others with respectively different numbers of syllables left the basic timing and the accentual dynamics of the clause perceptually unaffected. The stressed syllables (which I shall now call "accented syllables" in order to avoid the implication of intensity in the term "stress") remained the same in number. A unit of timing[1] was clearly perceived under these conditions--and may be called a "foot".

Compare:

[1] ā "ñí |t·ú'wān| tùm-ˌmí-nēē 'You know |thing| which-is-here'
[2] ā "bátí|t·ú'wān| tùm-ˌmí-nēē 'You carve-up|thing| which-is-here'
[3] ā "cáá |t·ú'wān| tùm-ˌmí-nēē 'You have |thing| which-is-here'
[4] ā "dákáfí |t·ú'wān| tùm-ˌmí-nēē 'You taste |thing| which-is-here'

In this set, the units 'ñí, 'bátí, 'cáá, and 'dákáfí ('know', 'carve-up', 'have', 'taste') are perceived as astonishingly similar in length, except that the length of ñí (but not of cáá) is partially carried by the conditioned length of the following t (int·ú'wān). The rhythm--clear, and easy to hear within this arrangement of examples--is unaffected. Accents come at the same perceived intervals; the accent of tú'wan is not delayed, that is, by the added syllables of the preceding 'dákáfí. The short ñí versus long cáá are perceived as phonemically and phonetically contrastive, even while the rhythm is unaffected; the compensatory length of [t·] perserves rhythmic length without affecting phonemic length. Junctures precede the unaccented syllables.

Laboratory displays of these recordings were subsequently made for us by Charles Peck, with analysis and commentary by Dr. Ruth Brend. The duration of the three feet of illustrations numbered [1] to [4] in two utterances was measured (in seconds) as follows:

[1]: ā'ñí t·ú'wān tù'mínēē

(with the [t·] calculated as part of the second/foot)

.3 .36 .42

.24 .3 .38

(with the [t·] calculated as part of the first foot)

.36 .3 .42

.34 .2 .38

[2]: ā'bátí

.4 .36 .4

.38 .3 .42

[3]: ā'cáá

.34 .32 .38

.32 .3 .4

[4]: ā'dákáfí

.48 .34 .4

.4 .34 .42

Brend considers that the [t·] probably belongs to a shared border between the first and second foot in utterance [1] and that, taking this into account, the measured differences between the length of the various utterances of the first foot in [1] to [4] to be no greater a variation than could be compatible with perceptual isochrony. (This is especially true in view of the second utterance of [4].) Other utterances of these same sentences measure as follows:

[1] (with [t·] as part of second foot):

.3 .33 .4

.25 .34 .43

(with [t·] as part of first foot):

.38 .35 .4

.34 .25 .43

[2] .38 .32 .42

.39 .3 .42

[3] .36 .32 .4

.38 .34 .39

[4] .48 .37 .42

.44 .32 .4

If the calculation of the utterances of [1], in all four cases above, puts the juncture in the middle of the [t·], then the measurements of the first two feet almost invariably come out as nearly identical.

The final foot proved to be longer than the first two, in some of the utterances. This was unexpected; perceptually it had not appeared longer. My assumption, based on prior work with accentual systems, was that perhaps the lengthening before pause was accompanied by a weakening, which lessened its perceptual impact, and went unnoticed by us. I asked from the laboratory further measurements which confirmed this hunch. In observing amplitude sections of these utterances, Brend reported that the over-all amplitude of the final foot, in each utterance, consistently measures two to three db lower than the amplitude of the first two feet, and there is, typically, a gradual decrease in amplitude in the final foot which is not seen in the first two feet.

I had long used whistling by informants to help me perceive tone changes, and wondered whether it might be helpful in studying dynamic features. On the basis of laboratory measurements, however, it has since become evident that informants, whistling forms like these, did not consistently whistle in chunks which corresponded either with feet or syllables, but rather seemed to mix these borders indiscriminately. Nevertheless, they consistently whistled the highest tone at places we have marked with double-stress (") to indicate the peak of the intonation contour as well as the heaviest accented syllable in the utterance. The frequency measurements here, therefore, would seem to confirm the hypothesis that the nucleus of these utterances falls at the places marked with double stress.

It seemed possible, furthermore, in an area where drums were widely used, some kind of tapping might reveal or support the analysis of some of the dynamic characteristics. We were unable to explore this possibility adequately--but tapping on a table or a tin did not appear to give as satisfactory a perceptual relation to speech as did the whistling. Brend, in measurements of the tapping, feels that the tapping units correspond more closely to syllable units than to feet. In instances where several syllables in speech are collapsed into one spoken foot, for example, the measurements of analogous tapped feet do not coincide with the groupings of the speech measurements. When, however, there is a one-to-one correspondence of number of syllables within two feet, these feet do measure as being very close to identical in length, and to this degree the hypothesis concerning isochrony of feet is confirmed by the tapping, since the consonant and vocalic structures of the syllables did not change the timing. For example, the tapping of [1] for the corresponding three feet postulated above measures as: .4 .38 .41. Within a foot, furthermore, the spoken syllables, when measured, reveal a definite pattern of long syllables occurring as the nuclei of feet, and short syllables as prenuclear. Measurements of the tapped syllables follow the spoken utterances at this point.

There seem to be contrasts between a foot with stress on the first syllable with a foot with stress on the second syllable. These differences are easily overlooked, however, because (a) tone interferes (a high-toned syllable is likely to sound stressed, a low one unstressed, to English speakers); (b) the phonetic difference is very slight, perceptually, so that it can easily be missed; (c) the phonetic character of the contrast may be length, rather than amplitude or pitch, (but this particular kind of length difference is awkward to abstract from syllable length caused by post-syllabic consonants or by bivocalic syllable nuclei); (d) a short syllable, half-long under accent, must be differentiated from a phonemic doublet.

[5] kĪ'jĪ·kĪ 'knife'
[6] kĪ'ñò·kō 'mouth'
[7] kĪ'bí·kĪ 'child'

In [5], vowel qualities and tone heights are kept constant. Here, under controlled conditions, a slight accent carried by half-length of vowel seemed to be perceived.

Pre-nuclear (pre-accented) syllables of the foot were perceived as especially rapid, helping to separate off one foot from a preceding one.

The laboratory analysis later shows, for [5],[6], and [7], that the contrast of tonal heights is confirmed: tone on all syllables of [5] is very even; tone on the middle syllable of [6] is lower than that on both the first and third syllables, with the tone on the third syllable being slightly lower than that of the first syllable; tone on the second syllable of [7] is considerably higher than that on syllables one and three, the tone on the third syllable starting at the same point as that on the first syllable, and then showing a considerable down-glide before silence in one utterance of [7].

As for length of spoken syllables, measurement of spectrograms follows (with three utterances of each item):

[5]	kī	'jī	kī
	.02	.06	.1
	.1	.16	.16
	.06	.2	.16
[6]	kī	'ñò	kō
	.04	.08	.12
	.11	.18	.2
	.1	.18	.21
[7]	kī	'bí	kī
	.08	.16	.16
	.06	.1	.11
	.1	.16	.2

These data confirm clearly that the pre-stress syllable, as expected, is especially short. On the other hand, the final syllable was often as long as--or even longer than--the accented syllable, which we had not predicted from our field observations. Here, as above in reference to the foot as a unit, we would now assume that a final drawled syllable would be heard as part of the prefinal phenomena and that this particular length had served as a cue to prepausal position rather than as a signal of placement relative to the nucleus of the foot. This necessitated, however, searching for further cues of accent within the acoustic data. A simple measurement of amplitude, however, does not show a one-to-one correspondence with perceived accent. There is a slight hint, however, that a sharper decrescendo occurs in the final unaccented syllable than in the central accented syllable where the amplitude is more constant throughout the syllable; the shape of the amplitude curve within the syllable--not just the crude amount--may prove to be relevant here.

We were disappointed to find that amplitude measurements of neither whistle nor of tap seemed to contribute to the location of the placement of stress since we were neither able to correlate it with our perceived accents nor to find in the record regularities which would suggest better hypotheses, our conclusion for the moment is that neither whistle nor tap in this instance was a useful heuristic device for determining the place of stress. I would personally, however, like to see the devices tested with a variety of languages and informants under the hypothesis that there might be some conditions under which they would be useful.

A hierarchy of feet, with smaller groups in larger ones, seemed to be present in the Basare data. The contrastive features, however, were not too clear nor completely consistent. As a hypothesis for further research, however, one can suggest that feet join into 'phonological phrases,' and these into 'phonological clauses'; the nucleus comes early, in each, marked by higher pitch, and perhaps sometimes by greater length (or sometimes even by intensity):

[8] a "yaa | 'káá | dɔ́min | doo || "án | 'káá | nan||

Here the intonational pitch seems to drop progressively lower from the beginning to the end, but with major upstep after the first double bar (not, however, as high as the initial start) and with minor ups and downs caused by the separate tones and by the included feet.

Brend suggests that perhaps the most crucial organizing principle for several of the levels of the hierarchy arises from length. Perceptually accented and unaccented syllables within a foot measure long and short respectively (with the exception of utterance-final syllables, for which see discussion above); sequences of feet within an utterance show isochrony, to a remarkable degree (with the exception of utterance-final feet, for which see above discussion); while a foot occurring at the peak of the intonation contour turns out to be slightly lengthened.

Grammatico-lexical considerations affect the hierarchical organization in various ways. The phonology is partially but not completely independent of lexicon and grammar, and vice versa.

A pronominal subject, as in [1-4], is often treated as part of the foot which has its nucleus in the verb. A longer, independent noun subject may comprise a separate foot, as in:

[9] à"lásàn | 'gífí-bì 'Alasan chops-them'

The object of a verb joins the preceding foot with verb as nucleus, if the verb is short--but may comprise a subsidiary foot if the verb is long:

[10] 'dòò"yéé | bī'nìb nìn | 'ká fàtàkù 'Formerly | people remote-time | saw blood'

[11] 'dòò"yéé | bī'nìb nìn | 'dàkàfì fàtàkù 'Formerly | people remote-time | thought-of blood'

Abua, of Nigeria, like Basare of Ghana, also has characteristics of rhythm dynamics which involve isochronic feet. A hypothesis worth exploring: The level, medial tones of a verb pattern are those which may be added on to or after the nucleus of the foot without modifying the timing of the foot. This hypothesis we have not had time to test. It seems, however, to hold some promise of illuminating the peculiar pattern of pitch controls which relate grammar to phonological hierarchy while ignoring--to some degree--syllable count.

For an Abua set of isochronic units note:

[1] [ọ́dị̋] kọ̋ọ̀sàgán '[He] has not cooked before'
[2] [ọ́d ị̋] k ọ̋ ọ̀ ƀụ̂gọ̀lgán '[He] has not drunk before'
[3] [ọ́d ị̋] k ő òkpògòròngạ́n '[He] has not peeled (plantain) before'

Where between k ọ̋ ọ̀...gán the medial series of like tones seemed to take perceptually-same time spans, whether one, two, or three syllables.
Imagine my surprise, therefore, when Brend showed me the following measurements in which the lengths are closely proportional to the number of syllables:

[1] sà -- .28
[2] ƀụ̀gọ̀l -- .44
[3] kpògòròn -- .6

Since, however, the retrospective perception of isochrony was so strong, I asked Brend to check the spectrograms again to see what would happen if--instead of measuring only the unstressed syllables--the entire foot were measured. (This would leave room for some type of compensatory lengthening such as we had with the long [tˑ] in the first of the Basare illustrations.) Note the following measurements, therefore:

[1] kọ̋ọ̀sàgán -- 1.0
[2] kọ̋ộƀụgọlgán -- 1.08
[3] kőòkpògòròngạ́n -- 1.18

As we compare these we notice once more that in spite of the difference of two syllables the respective feet are similar in length. I would conclude, therefore, that it is the foot length as a whole that must be studied if one is to correlate measurements with perception.

One must, if these data prove as a guide, however, not expect that the measurements be identical where the feet contain different number of syllables, but rather that a foot with four syllables will not be twice as long as two, nor one with five be five thirds longer than one with three. The partial shortening of the whole foot (relative to what it would be if each syllable took the same time) impresses the hearer as somehow 'rushing to a conclusion' which, in turn, is interpreted as in some sense 'the same'.

6.2. Tone

Many problems of tone analysis interlock in a fascinating complex: The placement of tone, as we have already seen, can be viewed as affected by the morphophonemics of a unit which is prefix-plus-stem-plus-suffix-plus-variant-number-of-stem-syllables (§5.2); or some of the same phenomena (e.g., a medial series of like-tone rapid syllables) can be related to accentual dynamics (6.1). The number of levels of tone in a language can for some purposes be viewed as a set of classical static contrastive tone phonemes; but for other purposes is better viewed as a basic set plus a special level limited to negative contexts; and in other instances of a different kind as a basic set with a special contrastive level developed through the loss of low syllables which leave a dynamic influence behind them. Allotones, under these conditions, bring problems of recognition and description. Both the theory and practice of treating tone languages are affected. New phonemes of tone seem to be visible in the process of development; West Africa seems to be an enormously interesting "laboratory" for the study of the dynamics of changing tone systems.

6.2.1. Basic Tone Heights

Niger-Congo languages of West Africa vary in the number of their basic or "normal" tones; e.g., Igede has four, Bette three, Degema two.

In Igede, the four levels of contrast were extraordinarily clear, with the particular informant brought to the workshop by Richard Bergman. (Tone data are from him and from Martin Leigh.) Instrumental analysis of utterances--which were spoken quite normally--gave displays which left the levels so clear cut that they appeared to Brend almost as if they had been "sung". The whistling of the patterns by the informant gave a similar result. Very little influence is seen where one tone affects another.

In the following illustrative set, note Igede contrasts within the frame ɔ̄...lɛ̀. Symbols are high to low respectively, /´/, /¯/, /'/, /`/ (where /^/ represents a lower-mid level tone, not a glide).

ɔ̄ hʊ́ lɛ̀	'He has washed'
ɔ̄ hʊ̄ lɛ̀	'He has stayed'
ɔ̄ hʊ̍ lɛ̀	'He has scattered'
ɔ̄ hʊ̀ lɛ̀	'He has flown'

Note also, lá 'to miss', lā 'to have', la̍ 'to chew a stick', là 'to bulge out'.

For Bette, note the following sets, contrasting both before low and after low respectively (with some fusion in the second context):

ùndì	kə̀n	'one person'
kūǹɔ̄	kə̀n	'one soul'
úší	kə̀n	'one kidney'
tyà	ùndì	'leave the person'
tyà̇	ụ̄̇n̆ɔ̄	'leave the soul'
tyạ̀̇	ụ́ší	'leave the kidney'

(and for further Bette tone heights, see below, §§6.2.5).

Agbo, also, has three tone levels, as seen in data from Klaus and Janice Spreda:

lɛ̀tá	'stone'
wàdūm	'man'
ɛ̀tɛ̀n	'animal'

On numerous short utterances, frame techniques can be used which compare levels of preceding and following pitches, without too much interference from intonational downdrift or conditioned variation of tones.

In many of the languages of West Africa, however, two basic tones are involved, plus added phenomena of great complexity--growing out of intonational downdrift, conditioned variation, and fusion with special residual phenomena (made up of morphophonemic replacements, newly developed tones, and levels of pitch which fit easily neither of these two categories). Illustrations will be found in the next few sections.

6.2.2. Extra-High Tone Developed from Lost High

The Degema and Engenni are very closely related Kwa languages (Delta Edo group). Yet, of the relatively few differences between them, two are of great interest in the study of the dynamics of the change of tone systems for West Africa as a whole. (Elaine Thomas supplied me with these materials.)

In the Degema, the personal prefix carries a regular high tone for subjunctive. In Engenni, however, the prefix is lost and the tone of the preceding word is replaced by a new tone level /˜/ which is higher than either of the two normal basic tones and in contrast with them. In addition, all tones (both in Degema and in Engenni) following the extra-high are a bit lower than they would be otherwise--the general "key" is depressed. Not only single low or high, but the entire following sequence is lowered somewhat.

Degema:
ímó əvə̀ é-kpéín ák·ýɔ̀
children two should-wash put-the
ímò ívə̋ kp̣éí ákɩ̀nà
children two-should wash pot-the
'the two children should wash the pot'

and

Degema:
ɔ́mɔ́yɔ̀ ɔ́-tà nʊ́vàɩ̀
child go to-house
Engenni:
ámɔ̀na̋ tá ´mʊ̀
child go house
'the child should go to the house'

The negative verbal prefix /ő- ∿ -ɔ̋/ in Degema already carries the extra-high tone--from unknown origin--but also passes it back to the preceding word in Engenni:

Degema:
ɔ́mɔ̀ nɔ́ɔ̀náyɔ̀ ő-kpéín ákɩ́yɔ̀
child this not-wash pot-the
Engenni:
ámɔ̀ ánɔ̀na̋ kpéí ákɩ̀nà
child this-not wash pot-the
'This child did not wash the pot'

In various other languages an extra-high tone occurs, and may be limited to the negative. Note, for Abua:

ñínạ̀ kẹ̀-kị́	'You will go'
ñínạ̀ kẹ̋-kị̀	'You will not go'
ñínạ̀ rè-búlạ́	'You are-forgetting'
ñínạ̀ re̋-bùlạ́	'You are-not-forgetting'
ñínạ̀ mị̀-kị́	'You would-have-gone'
ñínạ̀ mị̀-kị́´	'You would-not-have-gone'
póg	'Look!'
ke̋-pőg	'Do not look!'

Gardner and I seem also to hear, for this special Abua tone, an added intensity, or "tight" voice quality. Note, further, the high replaced by low following it, in the first two illustrative pairs. Brend's laboratory findings clearly confirm the special height with regard to measured frequencies. The extra-high tone is consistently and regularly higher than the normal high tone.

6.2.3. Lowered Key (Terrace) Developed from Lost Low

It has been less than a decade since Welmers[2] called attention to the linguists of this century the importance of 'downstep' or 'terrace' tone, to tonal studies. Much earlier Cristaler[3] (who had studied with Lepsius) had devised an elegantly simple orthography to cover accurately the transcription of Twi tone with its downstep; and--as Gleason pointed out to me--some published materials showed, in retrospect, that a downstep of a high tone could be correlated with evidence of a lost[4] low tone. The reconstructed low (sometimes optionally present) by conditioned variation lowered a preceding high; with the loss of the low, the lowering effect on the high remained, with three further results: (1) The key (general height of all following tones in the phrase, including high tones) was lowered accordingly. (2) Contrast developed between a normal-high (i.e., one not thus conditioned downward) after high, and a stepped-down-high after high and both contrast with low after high. (3) The resultant system of contrasts contained an imbalance: After any one morpheme with final low tone there could follow it only two contrastive phonetic levels--low and high; after any one morpheme with final high tone, a three-way contrast of phonetic levels could occur between high plus high, high plus stepped-down high (from a reconstructed low plus high morpheme), and high plus low. Thus (with /!/ representing the downstepping of the tone immediately following that symbol; and with *LH having high slightly lower phonetically than in *H):

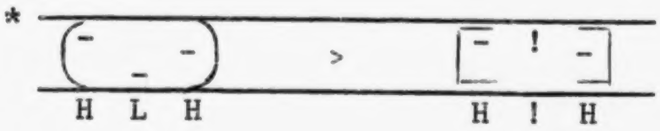
(1) i) H + H
ii) H + !H < *H + LH
iii) H + L

but

(2) i) L + H
ii) L + L

In phonetic graph (with hyphens representing relative height in the pitch envelope):

(3)



The place of the morpheme boundary--whether preceding versus following the low--affects radically the kind of phonetic differences one can find in frames. If the morpheme boundary precedes the *L as in (1ii), the three contrasts (HH, $H^{!}H$, HL) can be found following the first morpheme. When, however, the *low is part of the first morpheme, as in

(4) $H^{!}H < *HL + H$

then only two contrastive types can follow it:

(5) i) $H^{!} + H$ (high followed by lowered high)
ii) $H^{!} + L$ (high followed by low, which is unaffected by the loss of the preceding low)

since a normal high without downstep (see 1i) cannot occur there.

Once a high has been lowered by *L, the contrastive types and the phonetic lowering repeat,until the end of some kind of larger phonological phrase, producing a characteristic terracing effect.

The downstepping influence may also sometimes occur in the middle of a morpheme--and other complications occur.

The most extensive and illuminating discussion of the problem may be found in a series of exchanges[5] between Stewart, Welmers, and Schachter. Here Stewart proposes the influence /$^{!}$/ as itself a 'separate phoneme'; Schachter (p. 37) assumes that 'no strictly phonemic analysis'of the data is possible--and attempts to deal with them 'on the morphophonemic level'; Welmers (p. 55) has a writing system and analysis--which is 'not morphotonemic' but one showing 'phonemic contrast', such that one postulates (p. 56) somewhat cautiously either a system having 'three "tonemes" '(high, drop, low) or 'two "tonemes" plus a phonemic "downstep" '; in which, for example (1 i, ii, iii) could be written as HH, HD, HL.

The theoretical implications of the problem we leave for §6.2.8, in order to add certain kinds of detail.

6.2.4. Terrace Tone Developed from Low-Replaced-by-High

The major attention to terracing has been given to a downstepped high tone resulting from loss of a preceding vowel which had carried low tone (which had previously caused the lowering, nonphonemically, of the high following it).

In this section I wish (1) to emphasize that the downstep sometimes clearly develops not with the loss of a vowel carrying low tone, but by the morphophonemic replacement of a low tone by a high tone and (2) to show that this phenomenon sometimes has an extremely limited distribution, controlled in part by its place in a larger phrase.

The clearest data from the workshop, for these purposes, comes from Elaine Thomas, in a comparison of two closely-related languages--the Engenni and the Degema of Nigeria.

In Degema, three of the major tone classes of nouns have a downstepped tone which corresponds to a low tone in Engenni. Note, for example:

(6) i) Degema ák!ɩ́ 'pot'; Engenni akɩ̀
ii) Degema ùmém!é 'faith'; Engenni ùmê
iii) Degema ɛ́sàrʊ̀ 'mosquito'; Engenni ʊ́s!átʊ́
(Only a few nouns of the class *HL remain in Degema; most have become H!H.)

Within Degema there are numerous further evidences of !H < *L in syntactic positions. Note the verb plus object when verb ends in high:

(7) ɔ̀mɔ́n *ʊ̀kɔ́ > ɔ̀mɔ́n !ʊ́kɔ́ 'He saw a canoe'

For morphology, note:

(8) Engenni ɔ̀tá-nɩ̀ 'he went; Degema ɔ̀tá!án

On the other hand, the Degema changes of *L > !H in the noun seem to be extremely limited in distribution within the larger utterance. They occur (with possibly a few exceptions) only on morphemes directly preceding an utterance-final juncture. Compare:

(9) i) ɔ̀mɔ́n !ʊ́kɔ́ 'He saw a canoe'
ii) ɔ̀mɔ́n ʊ́kɔ́-yɔ̀ 'He saw the canoe'
iii) ɔ̀gɛ́ ɩ́k!ɩ́ 'He looked at pots'
iv) ɔ̀gɛ́n ɩ́kɩ́ yɔ̀ 'He looked at the pots'
v) ɔ̀yɩ̀ á-ɓ!ɔ́ 'He is there'
vi) ɔ́yɩ̀ á-ɓɔ́ mʊ́vàɩ̀ 'He is in the house'

In (9i) the *ʊ̀kɔ́ > !ʊ́kɔ́ ; in (9ii), however, low is replaced by normal high (*ʊ̀kɔ́ > ʊ́kɔ́) before a further morpheme.

6.2.5. Indications of a Developing Downstep in a Three-Level System

We have shown (§6.2.4) downstep in Degema, where only two regular levels occur (but an extra-high level is found in negative--see §6.2.2). Now I wish to show a downstep system occurring in a language with three regular levels. The data, from Bette, come from the work of Ruby Peterson and Irene Crane. Contrasts of the three Bette levels were shown in §6.2.1. We first, in 1a-c, repeat a set of contrasts after a low tone. Reconstructed forms are given with an asterisk when it is desired to show pre-fusion forms, or forms before tones have undergone morphophonemic change.

(1a) *(tyàŋ ùndì), /tyạ̀ ụ̀ndì/ 'leave the person'

(1b) *(tyàŋ kūnɔ̄) / tyạ̀ ụ̄nɔ̄ / 'leave the soul'

(1c) *(tyàŋ úší) / tyạ̀ ụ́ší / 'leave the kidney'

In (2a-2d), we establish that the first word is now a high tone or a sequence of high tones. Stresses are marked, perceived on the last high syllable of words, by a small vertical stroke.

(2a)	/kítə́'tə́l kə̀n/	'one basket'
(2b)	/í'yə́ kə̀n/	'one mother'
(2c)	*('bə́ lə̀ ùndì) /bə́ lùùndì/	'come with the person'
(2d)	/kígú'gó kə̀n/	'one hill'

A sequence of high-tone words is thus given in (3a). The pitch graph above the phonemic writing shows that a step down occurs after the syllable marked with stress (giving the phonetic impression of a down-step system).

(3a) *(í'yə́ 'á 'bə́ hə̄ kígú'gó) /í'yá 'á 'bé ígú'gó/ 'mother she came to the hill'

Then in (3b) a mid tone is introduced into the sequence, to show high tone stepping up after it. In (3c) a low tone is similarly introduced to show that the three-way contrast of levels still exists between two high-tone phonemes, the first of which is stressed.

(3b) *(íyə́ ábə́ hə̄ ūbō hə̄ kígúgó) /í'yá 'á 'bó ūbō hé ígú'gó/
'mother came to the main road on the hill'

(3c) *(íyə́ ábə́ lə̀ kítə́tə́l íší) /í'yá á 'bə́ lè ítə́' tə́l í'ší/
'mother came with a basket of kidneys'

Illustration (4a) shows a low-high word which with a preceding low in (4b) combines into a high high-low sequence. In (4c), it is seen that the change to (4b) first took place (by an ordered rule) and then was treated as beginning high in (4c), stepping down regularly after a stressed high.

(4a) *(kàtə́ kə̀n) /kàtə́ kə̀n/ 'one market'

(4b) *(hə̄ kàtə́) /hátə̂/ 'to the market'

(4c) *(kítə́tə́l kíbə́ hə̄ kàtə́) /kítə'tə́l í'bá ā 'tə̀/ 'the basket came to market'

The system described here (three regular phonemic levels plus a nonphonemic downstep after a stressed high) could very easily develop into a typical phonemic downstep, plus three phonemic levels. If, for instance, fusions as in (4c) were to lead to a different (nonfinal-in-word) placement of stress while retaining placement of downstep, the downstep would probably have become phonemic.

On the other hand, if other investigators (a) did not on these same data record stress as in the way we have done, and (b) if word boundaries were ignored, their analysis would probably show downstep as already phonemic. Inasmuch as stress analysis in this language is by no means obvious--or certain--the alternate analysis should be kept in view.

After this analysis in the field, laboratory work by Peck and Brend gives general confirmation of the pitch contrasts of instances such as (1a-c). Similarly, the instrumental measurements add no major difficulties to the analysis of pitch sequences in the downstep series--nor are they able at the moment to help very much (because of limits to current acoustic techniques) on the important problem of stress.

6.2.6. Overlap of Conditioned Allotones

In the Igede, of §6.2.1, levels were clean-cut, and fairly uniform in their respective heights throughout the phrase.

In downstep systems, however, conditioned variation of tone levels leads to extensive problems. This statement, however, is historically stated backwards: A system of conditioned variants of tone has led to the particular tone feature known as phonemic downstep. The sources may be the conditioned lowering of a high by a preceding low (§6.2.3); by conditioned lowering of high in its morphophonemic source in a low (§6.2.4); by a lowering of high after stress (§6.2.5). Or an extra high may take its source from a lost high (§6.2.2) which was raised before a low. Many morphophonemic changes (§5.2 , and Etung Appendix data) reveal conditioned-replacement of tones without observable current allophonic traces.

The extensive variety of such effects implies some general dynamic character (see also §6.1) for these systems: A general tendency for the pitch level of a phrase to 'drift' downward,[6] rather than stay on an even key, in steady pitch "bands".

In principle, if the drift were rapid enough, a three-toned system could have the following pattern:

```
H           H
M  H        M  H
L  M  H     L  M  H
   L  M #      L  M #
      L           L
```

in which each syllable can carry any one of three tone phonemes (H or M or L), but the next syllable in the series (with the same set of possible contrasts, no more and no less) would by conditioned variation (in the down-drifting contour), have each tone phoneme suppressed in phonetic (not phonemic) height one notch. The result would be : H + H would not be level (the second would be lower); M + H would be level with each other (but in phonemic contrast, relative to other potentially substituted elements at that point in that frame); L + M would also be on a single level, etc.[7]

In Degema, Thomas shows some of these phenomena. Between words (but not within them, under penalty of collapsing some of the system) a word-final low depresses a following word-initial low to its own low phonetic pitch, but a following word-initial low to lower than the first low. Note:

(1) <u>/mɪmɔ́n ɪ́kpè mékì/</u> 'I-saw goats in-market'

```
   -  -
 -      -  -
              -
 ______________
 L H  H L  H L
```

but

(2) <u>/mɪ̀mɔ́n ɪ́pà kɪ̀krɛ̀/</u> 'I-saw frogs all'

```
   -  -
 -     -
            - -
 ______________
 L H  H L  L  L
```

In (1), note that L and H in the middle of ɪ́kpè mékì are on the same level; and that -kì is lower than the first syllable of mɪ̀mɔ́n.

In (2), on the other hand, note that L plus L between ɪ́pà and kɪ̀krɛ̀ drops sharply; the L of kɪ̀- contrasts with (is lower than) the mé- of mékì in (1).

The phenomena, furthermore, are in addition to those for phonemic downsteps /!/ discussed for the same language in §6.2.4; the /!/ adds a <u>nonpredictable</u> <u>contrastive</u> drop outside the major system of two levels or the special high contrastive level (§6.2.2).

In Izi, data from Paul Meier illustrate one of the most pervasive--and, at first, disturbing--of these situations: A sequence of L H ! H has the low and the downstepped high on the same pitch:

/méè ré !jí/ 'I-present sell yams' (with è and !jí affirmed to be on the same level; a statement clearly confirmed, like many other crucial parts of the tone phonetics of Meier's material, by laboratory tests by Peck and Brend)

/mụ̋tụ̀rògbõ!nóší/ 'I threw a stick at Ogbona' (with -rò- and !nóší on same pitch; from *[mű tụ̀rụ̀ ògbőnà ósí])

But there is a contrast of LL with the !HH, in the same environment:

/mụ̃tụ̀rògbõnìphè/ 'I threw something at Ogbona' (with -nì- lower than rò--and -!no--; and with -phè still lower, since prefinal low-low drifts down a bit; from *[mụ̃ tụ̀rụ̀ ògbőnà íphé] where the nouns belong to different morphophonemic classes)

It is the presence of contrasts in such comparable environments which justifies the contrastive phonemic status of the elements; and it is the lack of more than the topologically-equatable members of the sets which forces the analysis of like-levels as phonetically-overlapping but phonemically contrasting tones in the different environments. (Emphasis on different environments is maintained, lest that kind of intersection of phonemes be postulated which is unacceptable within postulates of classical phonemics.)

Many other intricate problems of contrast arise in the Izi data, but they cannot be illustrated here in detail.

6.2.7. Towards Internal Reconstruction of Tone Chains

In scattered instances in preceding sections there have been given starred forms, implying some degree of internal reconstruction. Can such tentative, internal reconstruction be carried substantially further? If so, could it illuminate some of the deepest puzzles of Niger-Congo languages in which--for example--the negation of clause involves pitch changes at discontinuous places? And could it, furthermore, suggest sources for some of the most pervasive of tone rules--such as a "flip" of high-low forms to low-high, etc.?

To begin with, such an attempt must be viewed as representing constructs designed only to show correspondences between current spoken forms (or as a generative base for those forms). My hope, however, would be that it would stimulate longer range study into the history of changes in the respective language families. For illustration of this approach--but with no guarantee of accuracy--I choose a fragment of Etung data (from Thomas Edmondson, who is studying the problem further).

I begin with a pair of illustrations plus their associated starred forms, which I shall then attempt to justify:

(1) i) /á kà bá/ 'He (did) not come'
ii) *(↑ + à + kà↑ + bá)
(2) i) /á ká! bá/ 'They (did) not come'
ii) *(↑ + á↑ + kà↑ + bá)

The setting up of a difference between à 'he' and á 'they' is based on a large amount of data in non-negative forms, such as (3):

(3) i) à kí gùré 'He is selling'
ii) á kí gùré 'They are selling'

The difference between kà ∿ ká! is attributed to a raising influence associated with á↑ 'they' but not à 'he':

(4) ↑ + ˋ > ˊ!

It is important to note that this raising influence is not a phoneme like the lowering influence /!/, since it merely causes the replacement of /ˋ/ by /ˊ + !/ (already in the system phonemically) and neither adds a new level, nor a conditioned variant of a level. It is a morphophonemic symbol, not a phonemic one. (In some languages of the area there is the suspicion that a rising influence /i/, analogous to the lowering /!/, does achieve phonemic status. Meier is checking on this possibility in Izi; so far, however, I have not seen evidence which for me completely eliminates the nonphonemic interpretation. In Etung, the kind of data giving rise to this possibility have not been found.)

The ↑ before bá leaves it unaffected, since:

(5) ↑ + ˊ > ˊ

(whereas the bá after ˊ! of (2) develops an audible downstep of the !bá complex). Therefore morphonemic rising influence residing in kà↑ is not manifested--not detectable--in (2). Note, however:

(6) i) á kà rú!é 'He (did) not go'
ii) * (↑ + à + kà↑ + rùé)
(7) i) á ká rùé 'They (did) not go'
ii) *(↑ + á↑ + kà↑ + rùé)

In (7) one finds the Basic form of rùé, beginning with a low tone. When, therefore, the low of rù is replaced by high in (6), we deduce the inaudible presence of the morphophonemic ↑ in the preceding kà. But when the low of rù is replaced by high, the ↑ leaves its impact on rù, raising it to high. At the same time, however, the e of rùé is now heard in (6) as lower than the former-low-now-raised-to-high preceding it. All of these phonetic characteristics are represented phonemically by ...kà rú!é, within the regular interpretation of /!/ as causing the high after it to be a bit lower than the one before it.

Note, therefore, that at this point there arises some hope of eventually explaining reversals such as ˋ ˊ to ˊ ˋ, etc., in morphophonemic terms whereby a chain of elements affect the ones directly next to them. This would save some of the problems of explanation of tone replacements (which appear to be largely composed of assimilation phenomena) without requiring action at a distance. Explanation would then be in terms of the kinds of assimilative changes actually observable, currently, in fast versus slow forms, or across closely-related dialects.

Two further problems, however, would remain: (a) The origin of ↑ would itself have to be explained. This would now seem to comprise a reasonable research task. Can it, for example, by comparative techniques be traced to a lost high tone? Or does it suggest an easier way of searching for (or testing present hypothesis of) a phoneme /i/ of rising influence analogous to /!/? (b) The second feature to be noted carefully is that such influences perhaps do not alter the relevant domains of level pitches in those languages in which several syllables in a row hang together (all up, or all down) in rules; and several syllables of a domain operate in the rules like a single-syllable domain in the same rules.

Returning now to (1) and (2) we note that ↑ at the beginning of the formulas has not been justified. The added basic assumption here is that the transformation of a positive clause to a negative requires changes at more than one place in the clause. This, however, is amply demonstrated in clause materials (see Chapter 1, §§1.1.2). And if this is granted, the assignment of a second morpheme (or part of a morpheme, in an alternate analysis) to the clause complex (↑ before the pronoun, in addition to the kà) seems no longer surprising. Yet it is precisely this (or other?) morpheme with zero phonemes but with significant morphophonemic impact[8] which in part makes the negative appear so mysterious. Here, however, the ↑ plus third person à gives the á of (1).

Note, however, that we would have expected ↑ + ˋ to give ˊ!, as in (4). How can this absence be explained? Note that the downstepping influence would then have preceded the low of kà, which it cannot affect since:

(8) ! + ` > `

and therefore, for (1) (and including rule 5)

(9) *(↑ + à + kà↑ + bá)
> *(á! + kà↑ + bá)
> *(á + kà↑ + bá)
> (á kà bá)

We would like, however, to find an instance where the implied

(10) *(↑ + à + ´) > *(á!´)

with actualized downstep. This situation, however, is present in (6), where kà↑ raises the first syllable of rùé to rú!é with the expected resultant downstep of the last syllable, which is high.

I have not developed these rules to cover much of the Etung data (see Appendix, for material; Edmondson is working on a more extended analysis). I do hope, however, that this kind of approach will open the door to a new type of fruitful work in this area.

6.2.8. Theory of Phoneme Types as Item, Process, and Relation.

I now wish to suggest that these studies of tone (differentiating tone phonemes-of-level, from tone phoneme-of-downward-influence, from morphophonemic non-phonemic symbols of raising influence) can be fitted into a deeper theoretical perspective and at the same time help to solve an old problem.

The general thesis: That *phonemes may be of three types*--*item*, *process*, *and relation*; that these in some sense are related, in turn, to tagmemic perspectives of *particle*, *wave*, *and field*. The specific claim: That "segmental" elements such as /o, s, t/ are particle phonemes, as items; "suprasegmental" elements of tone level, and of length, are field phonemes, as purely relational elements; that the /!/ of Africa is neither a segment nor a relational pole of a sector of a field, but a wave (or process) phoneme.

Note that, in general, the particles--once the system is known--can in general be recognized in isolation, as 'things' in themselves. The field phonemes are recognizable by paradigmatic contrast in a frame; the frame shows contrastive relations within the subset of that field. The process phonemes are recognizable only in a sequence--in a phonological construction, or wave--in reference to *what has happened* to an item *previously* identified in the paradigmatic field.

The development of further implications of this view--and problems with the well-known relational characteristics of segmental phonemes in a phonological matrix--I must leave to another publication (now in process). This much, however, should indicate to the reader the deep theoretical significance of a special phoneme such as the downward influence /!/.

6.3. Segmental Phonemes

There is not space in this report to discuss at length the phonetic matters faced in the workshops in Ghana and Nigeria. Nor is it necessary to sketch the general picture for West Africa, which has been done so well, and so recently, by Peter Ladefoged.[9] Here, therefore, I shall mention only a few special problems.

6.3.1. On the Phonetics of Vowel Harmony

Working closely with Professor John M. Stewart[10] on Twi, I was interested in attempting to suggest classroom drills which would help students learn to hear and produce the difference between "close" versus "open" varieties of vowels. These sets are involved in vowel harmony, which is very extensive throughout the area of West Africa.

Stewart and I both operate on the assumption that it is the relatively forward versus back position of the root of the tongue--*not* height of the tongue dorsum--which is crucial to the contrast between, say, [i] versus [ɩ], [u] versus [ʊ]. Stewart's paper emphasizes the need for an added dimension--tongue-root fronting--as making the [i], [u] set marked; versus the other set unmarked. Linguistic morphophonemic problems of assimilation, he points out, could not be neatly handled otherwise. He also discusses at length the relevant literature.

My material, on the other hand, will--in a separate paper, in preparation--show the relation of exercises for vowel production to the exercises formerly published in my *Phonemics* (1947). Spectrograms by Peck and Brend,[11] analyzing both Ashante Twi data (Mr. Denteh, speaker) and samples of my artificial drill material, show some of the kind of modification of height of the first formant which might be expected by the postulated changes in the throat cavity.

6.3.2. General Phonetics

Various specific problems of detail were met, during the project, which need further study in relation to the dynamics of larger phonological units.

The relation of the phoneme to the syllable: In Bette [kùk^{u}ó] /kùk^{w}ó/ 'road' appeared dissyllabic in contrast to the trisyllablic [ùkù.ó] 'bowl'. Here problems of k^{w}V versus kVV--long known--continue to require careful attention in analysis.

Another problem related to vowel and syllable is apparently the contrast between a downglide, fast, on a single vowel versus the same kind of glide, slow, spread over two vowels: /â/ versus /áà/. Perhaps Abua furnished samples with ɔbíìm 'frog' versus oyîl 'priest'. Such elements, it should be clear, imply the need of careful handling of rhythm statements where--as in Abua--some degree of evenness in length is found for feet with differing number of syllables, or for syllables (in relation to feet) with differing number of vowels (see §6.1).

A problem of certain consonantal contrasts warrants continuing study: In Abua, the Gardners provide samples where I seem to hear phonemic contrasts between flapped versus nonflapped [l]. The flapped one appears to be shorter, weak, possibly shortening the preceding syllable; the nonflapped one appears to be longer, perhaps fortis, and affecting (lengthening), in its turn, the syllable before it. Note (with [l·] as the longer, fortis, nonflap types, [l̆] as flapped):

[òl·à] 'bangle', [òl̆à] 'intestines'.

For Agbo, Dr. Bendor-Samuel has in preparation, with Klaus Spreda, an article treating in more detail the problem of fortis consonants there.

6.3.3. On Data Collection Preparatory to Workshop Analysis

For any report such as that of the preceding section, the experienced analyst may retain a certain amount of reserve. Sample, isolated illustrations--no matter how contrastive and relevant they may appear--sometimes disintegrate under closer scrutiny. A supposed minimal pair, for example, may in fact contain a factor unnoticed, which makes the pair nonminimal and cuts all support from the analysis.

The reader may very well wonder, therefore, what kind of basic, solid tests are made in workshops such as those reported here, to minimize such sources of error in the phonemic work of some of the analysts who are in the early stages of investigation. And how, furthermore, can the data be checked rapidly--since time is limited--and problems isolated which warrant study in depth.

The approach--which I first applied extensively, in this particular form, in workshops in Peru in 1955-56--calls for the lining up of data in a specific format: Sounds which are similar, and subject to confusion in analysis (giving 'suspect pairs' of sounds) are in each instance, for example, lined up with hypotheses as to their contrast or as to their complementation, and accompanied by contrastive word lists--and preferably with tape recordings. Segment sequences (like ts) which in general experience are known to be unit phonemes in some languages, but sequences of phonemes in others, are required to be listed with arguments pro and con, supported in turn by data. Distributional patterns and lists--necessary for decision as to consistency or proof of statements of complementation or contrast are added.

Charts of phones and of phonemes show the patterned development of the analysis. Frames, for tone contrast, also lead to illustrated statements of morphophonemic rules and patterns of tone behavior.

With data before him in this form, the consultant[12] is able to check and utilize the underlying data rapidly--far more rapidly than he can do so from the standard professional article on the same data--and suggest further work.

The body of this report does not allow a full illustration of this type of data collection. But, since it is crucial to understand the technology of the workshop, I have included in an Appendix[13] a section on Agbo, by Klaus and Janice Spreda.

6.4. Intersection of Voice Quality with Gesture

Miss P. M. Revill attempted to go beyond routine linguistic analysis in Mbembe, by studying features of voice quality, speed, and rhythm with the expression of emotion.

To her surprise, however, it became evident that the contrast between certain strong emotional states was in part carried by verbal cues and in part by nonverbal ones. It was only by the intersection of vocal and gestural systems that some of the emotional states could be recognized and differentiated.

Specifically, for example, both anger and surprise were breathy, fast, and with low pitch on the final phrase. Yet portrayal of anger included fast nods of the head, with eyes rolling and flashing--characteristics not present with surprise. On the other hand, a surprised exclamation was accompanied by a quick movement of the hands, with palms upwards, whereas anger was accompanied (contrastively) by fast pointing gestures.[14]

For the details of this report--still in its preliminary stages--see the Appendix.

FOOTNOTES

[1] Kay Williamson, in A Grammar of Ijo Cambridge, 1965, p. 26, suggests, for the Kwa language, a similar unit of timing. Within these 'tone groups' morphophonemic changes of tone may occur (p.7), determined by the syntax. Tone groups become part of tone phrases, and of breath groups (pp. 7, 11-12).

[2] "Tonemics, Morphotonemics, and Tonal Morphemes" General Linguistics, 4, 1959, pp. 1-9.

[3] In A Grammar of the Asante and Fante Languages Called Tshi [Chwee, Twi], Basel, 1875 (republished in 1964 by Gregg Press Incorporated, Ridgewood, New Jersey).

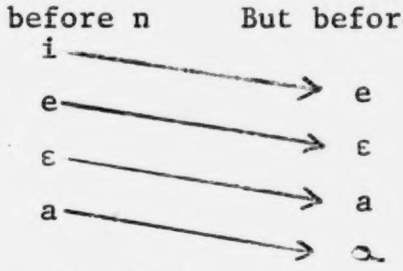
[4] E. g., in A. N. Tucker and J. Tompo Ole Mpaayei, A Maasai Grammar, London, Longman's Green and Co., 1955, p. 172.

[5] In J. M. Stewart, "The Typology of the Twi Tone System," with comments by P. Schacter and W. E. Welmers, preprint from the Bulletin of the Institute of African Studies I, Institute of African Studies, University of Ghana, n.d.

See also,--amongst others--D. W. Arnott "Downstep in the Tiv Verbal System," African Language Studies, 5. 34-51, 1964, and F. Winston, "The 'Mid Tone of Efih," African Language Studies, 1. 185-92, 1960. Winston's phonemic treatment of the downstepping influence is of special interest.

[6] Welmers has emphatically pointed this out--as in Stewart (reference in fn. 5), p. 54.

[7] For a comparable situation of overlap in classical phonemics, see in Danish in André Martinet, "Ou en est la phonologie?" Lingua 1, 1948, p. 43.



For explicit discussion of this kind of problem in the analysis of tone, see my Tone Languages, Ann Arbor: University of Michigan Press 1948, especially p. 57 (for graph) and pp. 61 and 56 (for insistence on adequate procedure to keep from being confused by change of general height (vs. phoneme height) from one syllable to another. Welmers, in discussing rather rigid tone 'bands' (see the Stewart article referred to above, in fn. 5), seems to have overlooked these sections of my material.

For further discussion of the more general problem in terms of typological comparability of subsystems of phonemes, see my Language, Glendale [now Santa Ana], California: Summer Institute of Linguistics, Part II, 1955, §§8.33 (7), 8.34, 8.441, 8.442.

[8] See, for my earlier struggle with comparable problems, the 'zero word' of Mixtec, in my Tone Languages, p. 82.

[9] In A Phonetic Study of West African Languages, an Auditory-Instrumental Survey, Cambridge: University Press, in association with the West African Languages Survey, 1964; West African Language Monographs 1.

[10] Whose paper on Tongue Root Position in Akan Vowel Harmony was read at the Sixth West African Languages Congress, Yaoundé, Cameroun, March, 1966.

[11] They cite H. K. Dunn, in "The Calculation of Vowel Resonances, and an Electrical Vocal Tract" The Journal of the Acoustical Society of America, 22, 1950, pp. 740-53.

[12] Or a later scholar or pedagogue who wished to work with informants in the same language.

[13] Some others are available in field reports of the Summer Institute of Linguistics. See, for example: John Callow, Collected Field Reports on The Phonology of Kasem, Accra, The Institute of African Studies, University of Ghana, 1965.

[14] One of the astonishing features of the whole workshop was the sight of a very quiet, shy, English girl transformed by the adoption of rolling eyes, and 'voice flashing fire'--in African "translation". No more striking illustration of the effective--and culturally determined--role of such cues has ever come to my attention.

CHAPTER VII: IMPLICATIONS OF MATRIX APPROACH IN PEDAGOGICAL PLANNING

How can a person effectively learn a language, preparing his own textbook, when he has neither teacher nor analysis available? This question was relevant to some persons in attendance as guests at part of the workshop. Their interests lay in techniques of language assimilation rather than in those of analysis.

In order to lead them to see the kind of problem they must solve, I inquired: What don't you know? When, of course, they could not answer this question (which might have appeared unreasonable to them), I then asked: If you don't know what it is that you don't know, how can you build lesson plans to teach yourself those points?

The implication: (1) There is needed some way of guessing at the presence of areas of analytical ignorance, so that (a) research can be undertaken in these areas and (b) drills could be set up for assimilating this data. (2) In some sense this must be a "bootstrap" operation--i.e., the construction of drills for assimilation cannot wait for a full analysis; analysis and assimilation need to proceed together. The problem is to demonstrate how this can be done at all, and--preferably--how it can be done smoothly.

The start: Memorization and simultaneous acting out of dialogue in cultural context. Language behavior and nonlanguage behavior must be learned as a unit (see paralinguistic tie in §6.4). A universal genetically determined seems to be the fact that human 'computers' are designed to learn language as part of other behavior--perceptual as well as social, etc.--and function very inefficiently when language is abstracted from life. My belief: Language neither begins nor ends with or within a context of sentences, but within a setting much larger than language itself, with perceptual contrast and linguistic-structure contrasts learned together. But the 'learning-together' is not the learning-at-the-same-time of disparate, disconnected, logically-separate events, patterns, rules, or habits. Rather, the togetherness is a logical dependency, the mutual entwining of axioms, definitions, and patterns: A thing cow as different from the thing horse may be learned at the same time as the difference between the words "cow" and "horse"; neither concept nor word can be experientially, logically, or linguistically completely disentangled the one from the other. (Note: I am not saying that language determines behavior, nor that behavior determines language, but that nonverbal and verbal behavior are in some sense a single package, with partially independent and partially dependent relationships.)

Such a behavior-integrated language view requires the discourse to be treated as more basic than any isolated sentence, since it is through the larger context that nonverbal and verbal behavior are entwined. Communication (as in the paralinguistic data of §6.4) involves both. The question: Does one know how to act in typical situations?--typical here referring to genetically-conditioned, expectable behavioral universals of eating, socializing, etc.--can therefore substitute in a larger sense for the question: What don't you know?

The transfer to linguistic search is immediate: Have I found linguistic structures (which must be there, for reasons just given) which allow me to discuss the needs or culturally-prescribed techniques of eating, or of discourse itself (with the presence of language as metalanguage being part of the genetically-prescribed and expected language potential)? Or: Have I found the means for expressing relations between the dramatis personae of a 'plot' (i.e., of a situation) in linguistic terms? Or: What are the linguistic correlates of actor, action, benefactee, etc.?

Since the presentation of these dramatis personae can be equated with components of linguistic structures, and more especially with tagmeme units (though also through lexical terms--as we have just employed the term "benefactee" for example), it follows that early search for crucial areas of behavior-ignorance can be achieved, heuristically, by an attempt to match guessed-at plot-universals with known linguistic devices.

When a gap appears--say the inability to express the instrumental in the target language--the analyst searches (through elicitation by translation, or through building tales, or by hunting through a recorded corpus) for the expected presence of the component in various linguistic levels, areas, structures.

The first guess, for the place of expression of some components, will depend in part on the cultural accident of the analyst's background. Both his native language and his linguistic sophistication and biases will color his early guesses. For the linguist with tagmemic tools available, however, effective guessing emphasizes two parts:

(1) He will attempt to get basic clause structures, in the forms of a syntactic paradigm. (See §1, and note the close resemblance in content to the base component which might be sought for by a transformationalist under comparable circumstances--a base component which since 1965[1] includes some explicit reference to syntactic features which begin to correlate with

the semantic component of a tagmeme, and with the vectors of a clause matrix of the tagmemicist.) Some plot relations will be found expressed as simple expansions of (optional tagmeme additions to) the basic clause patterns. Others (like the instrumental in Twi and Vagala, §1.1.1 and §2.2.4) may only be expressed by moving to structures on a different level.

(2) The learner will also attempt to set up matrices of clause types (and of other constructional levels). Irregularities here--holes in the pattern, or dangling, unintegrated bits--suggest search for the possibility of regularity--that is, for example, if a declarative statement is found both independent and dependent, but interrogative is listed only as independent, the analyst might well search for a possible dependent interrogative.

Lesson plans, then, can be built from the beginning of a knowledge of how to play-act and word-act. Discourse-in-play-act-context can be memorized (in standard fashion) before analysis is finished. Drills (al in standard fashion) can be set up using sample clauses, phrases, sentences from the discourse as frames for substitution drills. Expansion drills can exploit the addition of optional tagmemes of a construction. Discourse drills can be patterned on minimum speaker exchange (e.g., standard question-answer techniques). Derivation of complex from simple matrices, when known, show transfer of dramatis personae plot relations from one structure or level to another[2] (or, in other theoretical terms, transformation drills can be set up).

The advantage in pedagogical presentation, here, is the potential for a linguistic bookkeeping which allows one more easily to see just how much has been presented, relative to the partially-known system in each lesson, and in the sequence of lessons. If one keeps in an appendix a set of syntactic paradigms plus a set of matrices, each paragraph of the lesson can be keyed to the paradigms and matrices, and--in turn--these latter may have for each tagmeme and for each matrix cell a section number showing where in the text each item has been presented, drilled, expanded, and related to other structures from discourse to word.

Such an index meets the requirement raised at the first of this section. It allows the beginning analyst-learner[3] to know, in principle, what he knows, to guess at gaps; and to keep track of his assimilation responsibility toward what he knows analytically. In addition, it would vastly simplify the task of a textbook writer of a 'second-level' text by letting him see, directly, something of the structural rationale and developmental sequence of the data inherited from the writer of the first level.

FOOTNOTES

[1] Noam Chomsky, _Aspects of the Theory of Syntax_, Cambridge: The M. I. T. Press, 1965.

[2] See Kenneth L. Pike, "Discourse Analysis and Tagmeme Matrices," _Oceanic Linguistics_, 3, 1964, pp. 5-25.

[3] Herbert Stahlke, of the Evangelical Lutheran Mission, attempted to apply these principles in carrying on his learning of Yachi. He made available to me his report of the experiment, which confirms the usefulness of the approach under field conditions.

CHAPTER VIII: SUMMARY

Chapter 1: Studies are reported for certain Niger-Congo West African languages: Kasem, Vagala, Sisala, Dagaari, Bimoba, Basare, Twi, Bariba, Degema, Engenni, Igede, Izi, Abua, Mbembe, Agbo, Bette, Etung, Yachi. (Secondary sources are used, also, for Bobangi [Bantu] and Hausa [Chad, Afroasiatic],).

Clauses may be basic, or derived, described in reference to tagmemic contrasts, variation, and distribution.

Chapter 2: Clauses differ according to the place they occur in the sentence. In addition, clauses enter into specialized, characteristic clusters (serial clauses), within these sentence parts. Clauses in clusters exhibit special variants, loss of tagmemes, and co-occurrent restrictions. These processes lead to semantic specialization of subclusters; development of verb phrases; and classes of verbs seen as in a state of change. Some tagmemes and some clause variants expected by the English speaker to occur within the separate clause are expressed only within the clause cluster or subcluster. (See, also, §1.)

Chapter 3: Sentence clusters (= paragraphs) show, on a higher level, structural restrictions and relations analogous to those on lower level clusters. Nuclei of paragraphs (topic sentences) are structurally analogous to the independent clause of a sentence. Detailed study of discourse will apparently show similar kinds of structure, of which only the first bits are reported here.

Further kinds of discourse-tie involve the intricate relation of prescriptions for the choice of direct versus indirect quotation according--for example--to "on-stage" versus "off-stage" focus, status of speaker (chief versus commoner), involvement of dramatis personae (as speaker versus addressee, for example).

Chapter 4: Noun phrases, like clauses, can be described and compared in type by techniques of presentation in syntactic paradigm. Some noun phrases, like clauses, can be seen in process of change to a lower-level construction.

Matrix treatment of nouns allows irregularity to be seen as distortion of a simple field structure, and lays the ground for comparison across languages. Concord of noun to other tagmemes of a clause, seen via matrix, sometimes shows ordered regularities of a ranking type.

Chapter 5: Matrix presentation of verb structures allows the clear exhibition of highly complex rules of fusion by ordered change from simple matrix to derived matrix.

Chapter 6: Phonological study, to show the deeper underlying characteristics of these systems, must include relation to feet, in dynamic sequence (often in isochronic units with a varying number of syllables).

The tone systems of the area are observably in a state of change. In many of them a new, extra-high tone can be seen in a limited set of special contexts (e.g., the negative). Otherwise, basic, contrastive tone heights vary in number from two to four.

A special phoneme of process--a lowering (or "downstepping") influence--is characteristic of the region, and leads to a modification of phoneme theory to accommodate phonemes of particle (or item), of wave (or process) and of field (or relation). Segments like s, o, l would be phonemes of a particle type; high versus low tone would be relational elements of field; and the /!/ lowering influence would be a phoneme of process (distinct in phonological result from a hidden morphophonemic influence). Combinations of the three types, plus morphophonemic symbols, suggest special results for internal reconstruction of tone chains.

Segmental phonemes involve various problems--including the role of the throat in vowel harmony.

Phonological data can be presented, for testing a preliminary analysis, in a convenient summarizing format.

Vocal quality comprises one component of certain cues to emotional states. These ambiguities can be resolved only by the intersection of these cues with gestural ones.

Chapter 7: For the learning of a language before the analysis of that language is well along, tagmeme and matrix techniques allow for a bootstrap operation in which learning and analysis proceed simultaneously. Language is treated as but one component of communicative behavior. Discourse operates in a setting of action, and standard drill types exploit data from dialogue. But preliminary syntax paradigms allow the early use of substitution drills, while suggesting search-leads for expansion of patterns of constructions. Preliminary matrices of basic and derived constructions, on the other hand, allow search for analogous constructions implied by the presence of holes in the pattern. In addition, the combination of the two allows the construction of an index matrix which permits the textbook writer to keep track of the areas taught and those still to be taught--whether in a first text or on an advanced level. Thereby the learner can answer the question 'What don't you know?'--and set the stage to learn; while the textbook writer can discuss, in reference to his own efforts or those of a predecessor, 'What remains to be added before my task, as I define it, is done?'.

Appendix I

NOTES ON THE MBEMBE CLAUSE SYSTEM - A PRELIMINARY ANALYSIS

Kathleen Barnwell

Basic Theory:

(1) "Any unit of purposive human behavior is well-defined if and only if one describes it in reference to

a) contrast (and resulting identification)

b) range of variation (with its essential physical manifestation)

c) distribution (in class, in hierarchical sequence and in systemic matrix)"

K. L. Pike 'On Systems of Grammatical Structure'

This study of Mbembe clauses, therefore, aims to describe the clause unit with reference to contrasts of internal structure (the presence or absence of major places and differences in the classes which fill them) and of transformations, to variations in form (alloclauses) which occur in certain environments or which are controlled by factors of emphasis or style, and to distribution within the clause system and within the grammatical hierarchy, primarily within the next highest level, the sentence.

(2) Halliday observed in 1961 that the transformational approach is a 'valuable supplement' to, though not a replacement for other approaches to description. (M. A. K. Halliday 'Categories of the Theory of Grammar').

Longacre points out, in a recent article which demonstrates how tagmemics can gain valuable insights from transformational grammar while defending the usefulness of function-set notation and of the matrix approach, that "Transformational relations are not the only parameters which relate constructions. Rather transformations belong to a system of relations which includes non-transformational parameters as well." (R. E. Longacre 'Transformational Parameters in Tagmemic Field Structure').

On this principle Mbembe clauses are described both by paradigms showing the major places and fillers of the basic clause types, and by rules for the transformations of these basic clause types, the transformations being presented in matrix perspective where this is useful, thus cutting redundancy in the description.

(3) Longacre's 'dual criteria' principle has been applied for the separation of clause types. Clause types are separated if they contrast in two respects either

in internal structure, or in potential transforms, or in distribution, or by one such difference substantiated by the pressure of the system.

Note: This description is limited to major clause types, which comprise about 95 per cent of the text examined so far.

General Outline:

I Structural contrasts of basic clause types
↓
Citation paradigm of basic clause types
↓
Detailed comment on separate clause types and examples from text material.

II Chart of primary [widely applicable] transformations + rules
↓
Citation paradigm
↓
Examples from text material

III Chart of secondary [less widely applicable] transformations + rules
↓
Citation paradigm
↓
Examples from text material

IV Distribution of clause types in the grammatical hierarchy

V Variants of clause types determined by environment

VI Variants of clause types determined by emphasis or style

VII Close-knit clause composites {
Serial constructions
Result-clause composite
Introductory clause composite

VIII Outline of sentence structure

IX Illustrations of negative formations

Bibliography

I STRUCTURAL CONTRASTS OF THE BASIC CLAUSE TYPES

The basic clause types are classified on the basis of distribution in the sentence as Independent, those which may function as simple nucleus of a sentence, and Dependent, which may not so function.

Nine Independent and two Dependent clause types are set up. These show structural contrasts in:

a) the class of verb-roots which may function in the verbal phrase filling the Predicate place

b) the relationship of the fillers of the Complementation places (charted under the labels Object, Indirect Object, Complement and Goal) to the other components of the clause

c) the restrictions on the classes of fillers which may occur in various clause slots.

The Intransitive, Transitive, Ditransitive, Directive Motive, Stative and Independent Introductory (1) clause types have an optional extension of the verbal phrase which occurs after the Complementation places (or, if no Complementation places occur, immediately following the Predicate) and which consists of a reduplication of the verb functioning as head of the verbal phrase. e.g.

òte ó!ci étèn òcí lit. 'father eats meat eats'

Marginal places All basic clause types may be expanded by optional marginal places which may be diagrammed:

± Ex. 3:temporal/ time phrase/ particle/ modifier/	+ Nucleus	± Ex. 1:prep.p.	± Ex. 2:adverb/ emphatic pronoun/ temporal/

Expansions 1 and 2 do not occur in Dependent clauses.

Fillers of places in the Clause

Since this description is limited to the clause level a brief summary is given at this point of the nature of the fillers of these places. In a description of the whole grammatical hierarchy reference would be given back to phrase or word level.

Fillers of the Subject and Complementation places comprise:

nominal phrase

The most common types of nominal phrase are:

+ noun ± (+ demonstrative ± particle)	e.g.	ètèn 'ńdó sà 'meat that there'
+ noun ± possessive		ètèn 'cɛ́ 'meat his'
+ noun ± (± mín:à + numeral)		ànɔ̀ŋ mín:a àfà 'people about two'
+ noun ± qualifier		ɔ̂nɔ̀ŋ kpènáŋkpèn 'person every'
+ numeral		àfà 'two'

CHART I shows the structural contrasts of the Nucleus of the Basic Indicative clause types.

			Complementation			
	SUBJECT	PREDICATE	I.O.	OBJECT	COMPLEMENT	GOAL
INDEPENDENT	± n.p. n.p.co pro.	Intransitive v.p.	-	-	-	-
	± n.p.(p) n.p.co(p) pro.	Transitive v.p.	-	± n.p. n.p.co pro.	-	-
	± n.p.(p) n.p.co(p) pro.	Ditransitive v.p.	± n.p.(p) pro. n.p.co(p)	± n.p. n.p.co (pro.)	-	-
	± n.p. n.p.co pro.	Copulative v.p.	± n.p.(p) n.p.co(p) pro.	-	+ n.p. n.p.co	-
	± n.p.(p) n.p.co(p) pro.	Directive v.p.	-	-	-	± n.p. n.p.co
	± n.p.(p) n.p.co(p) pro.	Motive v.p.	-	+ n.p.(p) n.p.co(p) pro.	-	± n.p. n.p.co
	± n.p. n.p.co pro.	Stative v.p.	-	-	-	-
↓	± n.p. n.p.co pro.	Initiative v.p.	± Complementation + verbal noun			
	± n.p.(p) n.p.co(p) pro.	Introductory (1)	± n.p.(p) n.p.co(p) pro.	+ n.p.(c)	-	-
DEPENDENT	± n.p.(p) n.p.co(p) pro.	Introductory (1)	± n.p.(p) n.p.co(p) pro.	± n.p.(c)	± bɛ́ + speech/ clause	
	± n.p.(p) n.p.co(p) pro.	Introductory (2)	± n.p.(p) n.p.co(p) pro.	-		

n.p.(p) and n.p.co(p) indicates that the head of the construction filling this place must be a personal noun. However in fable style a non-personal noun may also function here.

n.p.(c) indicates that only a very limited group of nouns, which are semantically cognate with the preceding verb, may fill this place. e.g. gbá:ga ódìɛ 'speak word' nominal phrase composite

The most common nominal phrase composites are

n.p. + n.p. in appositional relationship

n.p. + link + n.p. in co-ordinative relationship

n.p. + relative clause/relative phrase in subordinative relationship

pro. + n.p. or n.p. + pro. in appositional relationship

pronoun

The filler of the Predicate place is a verbal phrase with a verb of the appropriate class as its head. The verbal phrase may be diagrammed:

± tense prefix ± aux 2 ± aux 1 + item + verb....± verb^{r}

e.g. m̀bìra ǹd ǹsí 'I also ? do'
aux2 aux1 verb
ḿ'm̀bìra ǹsí 'I will do again'

Expansion 3 place may be filled by:

time phrase In structure a time phrase is similar to a nominal phrase but a time word (e.g. èwù 'day') always functions as its head. It may be expanded by a relative clause.

e.g. èwù 'ńdó c´'mákwú mà
'day that which they-came here'

temporal e.g. méǹdá 'today' wéǹdó 'long ago'

particle e.g. má 'here, now'

modifier e.g. wùrá 'implies past' mìná 'implies about to happen'

Expansion 1 place may be filled by:

prepositional phrase which may be diagrammed:

+ prep. ± n.p./ ± (+ prep ± n.p./)
n.p. co/ n.p.co/
pronoun/

In the full expansion the second place is very commonly filled by a n.p. or n.p.co with a personal noun as its head, or by a pronoun.

e.g. ḳ ékwɔ̀:r ḳ ɔ́sɔ̀:m
'to tortoise to house'
'to torcoise's house'

Expansion 2 place may be filled by:

adverb e.g. máṭɛ̀ṭèmá 'plenty' mápyír 'completely' ɛ́bárɛ́bár 'quickly'

emphatic pronoun e.g. kámkám 'I alone' (reduplication of pronoun)

temporal

Chart II gives a Citation paradigm of the basic clause types. Minimum forms of the clauses are given with the fewest possible changes of the lexical items in order that the contrasts between the clause types should be highlighted.

A full description would include notes on each of the clause types giving further details of the classes of the fillers and any restrictions in their occurrence not shown on Chart I, and transformations or details of distribution relevant to the separation of clause types, notes on frequency, and examples from text material to illustrate the clause types and also to prove their validity from unelicited forms. In order to restrict the length of this paper only the Transitive and Directive clause types are here so described.*

CHART II Citation paradigm showing contrasts in the nuclear places of the basic clause types

Clause type	Subject	Predicate	Complementation
Intransitive	òte father	óꜜkpóŋá lingers	
Transitive	òte	óꜜci eats	étèn meat
Ditransitive	òte	ɔ́ꜜnáŋ gives	ŋ́wa ètèn child meat
Copulative	òte	óꜜde is	ɔ́ꜜvá:nɔ̀ŋ chief
Directive	òte father	óꜜyín goes	étèn meat (to fetch meat)
or	òte	óꜜyín goes	ɛ́pyá market
Motive	òte	ɔ́ꜜtɔ́:ma sends	ŋ́wa ètèn (to fetch meat) child meat
Stative	òte	óꜜjíƀ óꜜjíƀ is good rich	
Initiative	òte	ɔ́ꜜtɔ̀m begins	ètèn òc-cí (- indicates open meat to-eat transition)
Ind. Introductory 1	òte	ɔ́ꜜgbá:ga talks says	ŋ́wa òdìg child word
Dep. Introductory 1	òte	ɔ́ꜜgbá:ga says	ŋ́wà (±bɛ́) .... child that "......"
Dep. Introductory 2	òte	óꜜbén says	ŋ́wà (±bɛ́).... child that "......"

*Illustrations of the negative are given in Section IX.

Detailed comment on separate clause types with examples from texts specimen

Transitive clause type

i) About 60 per cent of verb-roots are classified as transitive.

ii) The Object place is very commonly filled. Where it is not filled the Object referent is nearly always either explicit in the linguistic context (e.g. in a serial construction the object referent may be explicit in a preceding clause) or implicit in the non-linguistic context. In Conversation style discourse, where the linguistic and non-linguistic contexts are more closely interrelated than in Narration style, the object is quite commonly implicit in the non-linguistic context.

iii) Transitive clauses may be transformed, without any apparent change of meaning, by the use of the verb tɔ́ga 'take' into a clause serial construction and quite frequently occur in this form.

e.g. ɔ̀te óc̍i étèn may be transformed into the serial construction (clause group)^{tr} (see section VII)

ɔ̀te ɔ́t̍ɔ́ga étèn ɔ̀cí

father takes meat eats

This potential transformation further distinguishes the Transitive clause type from the Directive which may not be transformed into a serial construction.

iv) The Object and Expansion 1 places are not very commonly filled in the same clause, especially where one is filled by an expanded phrase composite, although examples do occur in text. This is avoided by the use of the same serial transformation.

e.g. ɔ̀yíga íjɔ̀:g ña ɛ́kpà may be transformed into the serial construction

he-put snake in bag

O Ex.1

ɔ̀tɔ́ga íjɔ̀:g ɔ̀yígá ña ɛ́kpà

he-took snake put in bag

v) The transitive clause may function as the first element of a Result clause composite (see section VII). This further distinguishes it from the Directive clause which may not so function.

Examples from text

kɛ́` oyéna étèn 'ńdó ḳɛ̀ḳɛ́ (20.2)
he has meat that alone
S P O Ex.2
pro tr n.p. emp.pro.

àlí bàbá ɔ̀yén ɛ́ñàñà (113.1)
Ali Baba has a horse
S P O
tr n.p.

m ɔ́ta ɛ̀ / ɔ̀fɔ̀ (20.1)
he-will him he-kill
-shoot
P O / P
tr pro tr

where the object referent of the second clause is explicit in the linguistic context.

ɔ̀dúŋa ótènḳɔ́ƀɔ́ 'ŋ́wó ña ´ìṣèg / ɔ̀ṭɔ́ga / óḳé ṣa ó!ƀó k!ẅɛ́
he-picked bone- that on ground he-took he-put in bag his
-up
P O Ex.1. / P / P Ex.1.
tr n.p. prep.p. tr tr prep.p.

where the object referent of the second and third clause is explicit in the linguistic context. The last two clauses illustrate a serial construction transformation of a transitive clause.

Directive clause type

i) About 2 per cent of verb-roots are classified as directive, the most common being yín 'come, go, fetch' and ṭá 'go'.

ii) The Directive clause is further distinguished from the Transitive clause by the fact that the potential transformations described for the Transitive clause (above, iii and iv) may not be applied, and that it may not function as the first element of a Result clause composite.

iii) Where a place name (e.g. Enugu) or a noun indicating a place e.g. ɛ́ƥyá 'market' fills the Goal place, a preposition may be inserted before the noun thus transforming it into a prepositional phrase.

e.g. ɔ̀ṭa ɛ́ƥyá may be transformed to ɔ̀ṭá sa ɛ́ƥyá
he-goes market — he-goes to market
P Goal — P Ex.1
dir n.p. — dir prep.p

iv) Either the Goal place or Ex.1. place is almost always (perhaps) filled or is explicit in the linguistic context. An exception to this rule is the common use of the verb yín to mean 'to go to farm'. In this use the Goal place is not filled.

Examples from text

ɔ̀yín árɔ́ƀ ḳ´ɛ̀sɔ́:gá (1.4)
she-goes mushrooms in evening (she goes mushrooming...)
P Goal Ex.1
dir n.p. prep.p.

..óyín ɛ́ƥyá (19.1)
he-goes market
P Goal
dir n.p.

....áyín ɛ́g'!ƀájí (18.3)
they-go hunting
P Goal
dir n.p.

II PRIMARY TRANSFORMATIONS OF THE BASIC CLAUSE TYPES

The basic clause types may be transformed by three dimensions of contrastive coordinates:

i) Mood	ii) Aspect	iii) Neg/Pos
Indicative (basic)	imperfective (basic)	positive (basic)
Imperative	perfective	negative
Subjunctive		
Interrogative		
Subordinate		
Relative		

Of these, Mood transformations are considered primary because they are relevant to all basic clause types and because they are relevant to the statement of restrictions on the distribution of clauses, which the other dimensions of coordinates are not.

CHART III shows the possible transformations of the basic clause types into contrastive moods

	Indic.	Imper.	Subj.	Inter.	Subord.	Relative
Intrans.	X	X	X	X	X	X
Trans.	X	X	X	X	X	X
Ditrans.	X	X	(X)	X	X	X
Copul.	X	(X)	X	X	X	X
Direct.	X	X	(X)	X	X	(X)
Motive	X	(X)	(X)	(X)	(X)	(X)
Stative	X	(X)	(X)	(X)	X	X
Initiative	X	X	(X)	X	(X)	X
Ind. Intro.1	X	X	X	X	X	(X)
Dep. Intro.1	X	X	(X)	X	X	X
Dep. Intro.2	X	X	(X)	X	X	(X)

(X) indicates that this form has not yet been found in text material, only in elicited forms.

Rules for the transformation of basic clause types into different moods

The points in which the Indicative mood contrasts with other moods are summarized. Transformations of other moods are described in relation to contrast with the indicative.

Indicative i) Has the order Ex.3 S P Complementation Ex.1 Ex.2
ii) Obligatory presence of order 1 verb-prefixes (person)
iii) Optional occurrence of order 2 verb-prefixes (tense) and of verb-auxiliaries within the verbal phrase
iv) Occurrence of indicative tone patterns

Imperative i) Obligatory absence of Subject place
ii) Obligatory absence of person and tense verb-prefixes
iii) Occurrence of imperative verb-prefixes zero 'sing'
ma- 'plu.'
iv) Occurrence of imperative tone patterns

Subjunctive i) Optional presence of particles c' or bɛ́ preceding the Subject or Predicate place
ii) Occurrence of distinctive tone patterns

Interrogative i) Occurrence of an interrogative class word in the Subject place, or in any one of the Complementation places, or in Fx.1 place

Subordinate i) Obligatory occurrence of clause conjunction Examples of clause conjunctions are ódè 'if' pírá 'before' mínà kw' 'like'
ii) Distinctive tone patterns (= same as subjunctive)

Relative i) Obligatory presence of a relative particle (in concord with the noun which the clause qualifies)

Interrogative, Subordinate and Relative clauses are further distinguished by differences of distribution. These are described in section IV.

CHART IV Citation Paradigm for the transitive vector of Mood transformations
[= second row of Chart III]

Indicative	òte óꜜci étèn father eats meat
Imperative	ci étèn eat meat!
Subjunctive	c' óꜜte óꜜci étèn let father eat meat
Interrogative	àñi óci étèn or òte óꜜci m̀bɔ́ŋ who eats meat? father eats what?
Subordinate	óde óte óꜜci étèn (mɔ́dɔ́:b) if father eats meat (he-will-be-satisfied)
Relative	ɔ̀nɔ̀ŋ kw' óꜜci étèn (mɔ́dɔ́:b) someone who eats meat he-will-be-satisfied

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Examples from text

Imperative t̩ɔ́ga ákà kwɔ́ / t̩ímá / ɓáná (68.3)
take mother your take go
P O / P / P
tr n.p. tr tr

.. mège m̀ ɔ̀tɔ̀g -i (11.4)
give me thing
P IO O
ditr pro n.p.

bén ɛ̀ (bɛ́) ... (11.3)
tell him that
P IO
intro 2
Pronoun

Subjunctive c' ɔ́ꜝkpɔ́gá mín:à (12.2)
let it-end so
P Ex.2
intr adv.

Interrogative ...èpèkwúg c' ɔ́nɔ̀ŋ kw' óꜝpe ɔ́ꜝbákwɛ́ éníŋá mén -o (126.5)
grave of person who died newly it-is where ?
- - - S - - - - - - - - P Ex.1
n.p.co intr interrogative

...ɔ́gbánɔ́ká' kwɛ́ ókpéná yén (128.3)
brother his is-called what?
S P Comp
n.p. cop interrogative

ŋ́wó mà ókéɓ áñì -o (85.1)
this here meets whom ?
S P O
n.p. tr interrogative

Subordinate .. óde ábén bɛ́/ àyín ɔ́tɔ̀g (k̩ íkèn yín) (2.1)
if you-want that you-go thing early go
conj P P Goal Ex. P
intro2 dir n.p. prep.p. dir

.. í̩sa òyòg òkwú / (m ɔ́ta ɛ̀ / ɔ̀f̩ɔ̀) (20.2)
if friend comes he-will -shoot him he-kill
conj S P P O P
n.p. dir tr pro tr

Relative	ɔ̀nɔ̀ŋ	ɔ̀dɔ́gɔ̀dɔ́g	kw'	ɔ́ꜝŋwa	ɛ́ꜝgbá	sà	/	k̩ɛ̀	n	òkwu ...	(21.4)
	person	other	who	enters	bush	there		he		come ...	
			rel	P	Goal	Ex.1					
				dir	n.p.	prep					
		S:n.p.		co						P	

wá	òkpìcènɔ̀ŋ	wànɛ	ònɪ́ŋ	-e	kw'óꜝd	ópyém	ɔ́tɔ̀g...	(13.3)
once	blindman	one	was		who	begged	thing	
Ex.3	S		P		rel	P	O	
temporal	n.p.		intr			tr	n.p.	
					extension of S			

ɔ́gbánɔ́ká'	kwɛ́	kw'	máꜝyérɛ́	kàsúm	ɔ́náŋ	ɛ̀	guage...	(117.2)
brother	his	whom	they-call	K.	gave	her	guage	
		rel	P	Comp				
			cop					
	S: n.p.		co		P	IO	O	

III SECONDARY TRANSFORMATIONS OF THE BASIC CLAUSE TYPES

The clauses of the Indicative, Interrogative, Subordinate and Relative vectors of Chart III may be further transformed into the perfective aspect, in contrast to the imperfective aspect, the basic form.

The clauses of the Imperative, Subjunctive, Interrogative, Subordinate and Relative vectors of Chart III may be further transformed into the negative, in contrast to the positive, the basic form. Indicative imperfective and Indicative perfective clauses may both be transformed into the negative.

CHART V showing secondary transformations of clause types

		Positive	Negative
INDICATIVE	imperfective	x	a
	perfective	b	c
	IMPERATIVE	x	d
	SUBJUNCTIVE	x	e
INTERROGATIVE	imperfective	x	f
	perfective	g	
SUBORDINATE	imperfective	x	h
	perfective	j	
RELATIVE	imperfective	x	k
	perfective	m	

x indicates clauses reached by primary transformations only.

letters (a,b, etc) aim to coordinate this chart with the rules for secondary transformations which are given in paradigm format in Chart VI.

CHART VI corresponds to Chart V. Rules for secondary transformations are given in paradigm form

	Positive	Negative
Indic. imperf.	x	a Predicate occurs clause finally. Negative verb-prefix m- occurs. Distinctive tone pattern ` ´. Final vowel of group 1 on verb.
Indic. perf.	b Predicate follows complementation, precedes margin. k' clitic occurs before 1st complementation place/or before Predicate. Distinctive tone pattern. Verb-suffix -a.	c Predicate occurs clause finally. Negative verb-prefix k' occurs. Distinctive tone-pattern. Final vowel of group 2 on verb.
Imperative	x	d Predicate occurs clause finally. Negative imperative prefixes kà- and ŋkà- occur. Tone pattern as for Indic. imperf. negative.
Subjunctive	x	e Transforms into a negative imperative intro. composite kàcér 'do not agree' + indicative clause.
Inter. imperf.	x	f Predicate occurs clause finally. Negative verb-prefix ínà-. Tone pattern as for Indic. perf. neg. Occurrence of interrogative word as filler of S. Comp. or Fx.1.
Inter. perf.	g Form as for Indic. perf. pos. with substitution of interrogative word as filler of S. Comp. or Ex.1.	
Subord. imperf.	x	h Predicate occurs clause finally. Negative verb-prefix ínà-. Final vowel of group 2 on verb. Occurrence of conjunction.
Subord. perf.	j Form as for Indic. perf. pos. Obligatory occurrence of conjunction.	
Relative imperf.	x	k Predicate occurs clause finally. Negative verb-prefix ínà-. Final vowel of group 2 on verb. Occurrence of relative particle.
Relative perf.	m Form as for Indic. perf. pos. Obligatory occurrence of relative particle.	

CHART VII Citation paradigm of the secondary transformations showing positive and negative forms for the Indicative imperfective, Indicative perfective, Imperative and Subjunctive

	Positive	Negative
Indic. imperf.	òte óci étèn s̩a ɔ́sɔ̀:m father eats meat in house x	òte ètèn sa ɔ́sɔ́:m mòcí father meat' in house won't-eat a
Indic. perf.	òté k̩'étèn ɔ̀cá s̩a ɔ́sɔ̀:m father meat ate in house past b	òte étèn sa ɔ́sɔ̀:m kó!cí father meat' in house hasn't eaten c
Imperative	ci étèn s̩a ɔ́sɔ̀:m eat meat in house x	ètèn s̩a ɔ́sɔ̀:m kàcí meat in house do-not-eat d
Subjunctive	óte ó!ci étèn s̩a ɔ́sɔ̀:m let father eat meat in house x	kàcér òte ó!ci étèn sa ɔ́sɔ̀:m do-not-let father eat meat in house e

Examples of secondary transformations taken from text

a) mìnà mmòsé (16.1)

us he-will-not-see

b) ... tátà ŋ́wó k̩' íjɔ̀:g ɔ̀d ɔ̀bɔ́gá s̩a ´ɛ̀gbá (14.3)

father that past snake caught in bush

k̩'á!pá k̩ k̩ɔ́` m̀fà (20.4)

you-have-died past you I-have-killed

c) òkpìcènɔ̀ŋ ŋ́wo ɔ́!bɔ́:g ñí k̩ɛ̀ k̩ ɛ́kpà kɔ́!nɔ́:m (15.1)

blindman that hand in him in bag did-not-put

k̩àm ɛ̀ká:rá k-ḿmá:ŋ (10.5)

I English can't-hear

IV THE DISTRIBUTION OF CLAUSE TYPES IN THE GRAMMATICAL HIERARCHY

In the description of clauses so far, contrastive distribution has not been considered. In this section the places in which clauses may function are listed. Chart VIII shows what classes of clauses may occur in each place.

Clauses function primarily as elements of clause level composites and of sentences. Clause constructs may also function as an element of the phrase. Clauses may function in the following positions: (see sentence structure diagram Section VIII)

i) as simple nucleus of a sentence
ii) as inner margin of a sentence
iii) as outer margin of a sentence

iv) as 1st element in a result clause composite (see result clause composite diagram section VII)

v) as second element in a result clause composite

vi) as primary clause in a clause serial construction (see clause serial construction section VII)

vii) as secondary clause in a clause serial construction

viii) as first element of an Introductory composite (see Introductory composite section VII)

ix) as an element of a nominal phrase composite

CHART VIII shows, in general, the distribution of clauses in these places

	Indic.	Imper.	Subj.	Inter.	Subord.	Relative	Dep. Intro.
i)	x	x	x	x			
ii)					x		
iii)	x						
iv)	x	x					
v)	x						
vi)	x	x		x			
vii)	x	x		x			
viii)							x
ix)						x	

V VARIANTS OF CLAUSE TYPES DETERMINED BY ENVIRONMENT

Independent and Dependent clauses have allovariants whose occurrence is determined by their distribution in the environments summarized above.

In environment v: Clauses in this position cannot have the same subject referent as the preceding clause. The subject place must have the same referent as some other place which is explicitly filled in the preceding clause. This must be apparent either by an explicit filler of the Subject place or by the concord of the verb prefix.

In environment vii: Clauses in this position have obligatory absence of Subject place. Their subject referent must be the same as that of the primary clause in the serial construction. This is indicated by concord of the verb-prefix with the Subject of the primary clause.

In environment ix: Relative clauses functioning as elements of a noun phrase composite may occur in one of two relationships to the nouns they qualify.

a) Objective: Only Ditransitive and Transitive clauses may occur in this relationship. The Object place of a clause functioning in this way is obligatorily absent, since the logical object is the noun which the clause qualifies.

e.g. màyóŋa íƚɔ́:ŋ k ósè kw' ḿ' ńtá bɔ̀ŋà má

listen ears to story which I-will-tell you here

where the qualified noun òsè is the logical object of the relative clause.

b) Subjective: The Subject place of a clause functioning in this relationship is obligatorily absent since the logical subject is the noun which the clause qualifies.

e.g. ɔ̀kpìcènɔ̀ŋ òᵽyèm ɔ̀cátɔ̀g kw' ód ókìkèn òᵽyèm

blind man begged food who after he-begged

Where the qualified noun ɔ̀kpìcènɔ̀ŋ is the logical subject of the relative clause.

VI VARIANTS* OF CLAUSE TYPES DETERMINED BY EMPHASIS

Independent and Dependent clauses have allovariants whose occurrence is determined by factors of emphasis and style.

Front shifting of the object

The Object of a clause may be moved to the initial position in the clause for emphasis.

e.g. òbò ŋ́wó kẃ wùrà òte óbèn bɛ́ ɔ́fɔ ókpìcènɔ̀ŋ ŋ́wó ìvà 'pɛ́

death that which once father said that he-kill blindman that children his

- - - - - - - - - - - - - - - 0 - - - - - - - - - - - - - - - - S

ànɔ̀ŋ àfà bɛ̀ n àtéra àpè

people two they instead died

S P

ɛ̀mɔ̀ŋ ɛ̌ɛ́ máᵽyír ɔ̀d ɔ̀kɔ́:n mín:à (13).

song his all he-sang so

- - 0 - - - - P Ex.2

VII CLOSE KNIT CLAUSE COMPOSITES

Certain close-knit clause composites occur:

Serial clause construction

Introductory clause composite

Result clause composite

These only function in positions in which an Independent clause may also occur. Most commonly they function as nucleus of a sentence. The internal structure of such composites involves structural restrictions and sequence restrictions of co-occurrence. The relationship within the composite is therefore different from that between the nucleus of the sentence and the marginal places which involves only obligatory versus optional occurrence.

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* [In the report, changes caused by shifting tagmemes for emphasis are treated as leading to sets of emphatic clauses, one set for each basic type. K. L. P.]

In the following description these composites are treated as elements of the sentence, on the same level as independent clauses.

Serial* Clause Constructions

'Serial clause construction' = series of clauses

'Serial clause' = one clause in series

Serial clause constructions consist of a sequence of clauses which:

(i) Share one Subject, the Subject being optionally explicit in the first (primary) clause of the series and obligatorily absent in all secondary clauses.

(ii) Have verbal prefixes throughout the construction showing concord with the Subject referent in person and number.

(iii) All occur in the Indicative mood, _or_ all occur in the Imperative mood, _or_ all occur in the Indicative mood except the first or last clause which is in the Interrogative mood.

Up to six clauses may occur in one serial. Two, three, or four is more common.

Introductory clause composites may also function as elements of the serial construction with the restrictions described above.

Chart IX shows restrictions on the clause types which may occur in serial constructions and on their co-occurrence.

Relationships within the serial are described in terms of Wave (waves of reference) and Particle (clause, and clause group units) perspective.

Waves of Reference. Within the serial construction certain places, notably, Subject, Object and Fx.1 (Locational) may be shared by several clauses in implicit reference, while being explicit in one clause only. The _Wave of Reference_ of the shared place extends over all those clauses which share the reverent, i.e., which could be reconstructed as independent clauses in which the same referent is explicit. The same phenomena could be viewed from a particle perspective in terms of deletion.

e.g.,	ìkwànɔ̀ŋ	ɔ̀ká:ƀa	áɨ̀í	/	òwònà	/	ògwó	/	òníŋa	ɛ́wɔ̀r
	woman	she-fetches	water		she-pours		she-drinks		she-sits	seat
	S	P:tr	O		P:tr		P:tr		P:tr	O

---

* [Called clause clusters in the report. K. L. P.]

The construction could be reconstructed as a series of independent sentences.

S ↓ 0 ↓

ìkwànɔ̀ŋ ɔ̀ká:ɓa áśí	'woman fetches water'
ìkwànɔ̀ŋ ɔ̀wóna áśí	'woman pours water'
ìkwànɔ̀ŋ ɔ̀gwó áśí	'woman drinks water'
ìkwànɔ̀ŋ ɔ̀níŋa ɛ́wɔ̀r	'woman sits seat'

ìkwànɔ̀ŋ is the Subject referent of all four clauses

áśí is the Object referent of the first three clauses

The Subject wave of reference, therefore, extends throughout the construction. The Object wave of reference extends over the first three clauses. This may be diagrammed:

ìkwànɔ̀ŋ ɔ̀ká:ɓa áśí ɔ̀wóŋa óǵwó ɔ̀níŋa ɛ́wɔ̀r

S ————————————→

0 ————→

Clause Groups reflect certain close-knit relationships within the serial construction. They are set up on the basis of:

(a) frequency of occurrence of certain patterns

(b) restrictions of the fillers of certain Predicate places

(c) potentiality of transform

The Transitive group may be diagrammed:

+P:ţɔ́ga + 0 ± P:ţɔ́ga + P:tr ± Ex.1
ţíma ţíma

0 ——————→

This may be transformed into a single clause P:tr + 0 ± Ex.1. There is a tendency to avoid the occurrence of two non-Predicate places explicit in one clause within a serial construction.

The Ditransitive group may be diagrammed:

+P:ţɔ́ga + 0 + P:ditr +IO
ţíma

0 ————→

This may be transformed into a single clause P:ditr + IO + 0

The Accompaniment group may be diagrammed:

+P:ţíma +0 ± P:ţíma + P:tr + 0 /
ţɔ́ga ţɔ́ga + P:ditr + 0
+ P:intr /
+ P:ditr + Goal /

0 ————→

The Object referent of the two obligatory clauses must not be the same. This group will not transform to a single clause.

Groups may be, but are not commonly, interrupted by other serial clauses (occurring before the second predicate).

If the first clause of the group occurs within an Object wave of reference the Object will not be explicit.

'Clause Auxiliary Verbs'

Certain verbs deserve comment because of the frequency of their occurrence in serial constructions. In order to show their place in the system they are contrasted with two classes of Verb auxiliaries which function within the verbal phrase.

Aux. 1 functions immediately preceding the verb in the verbal phrase. It comprises only one member -d' usually translated 'went did something'. It never occurs in an unelided form but may be prefixed by the full range of verb prefixes.

Aux. 2 functions immediately preceding Aux. 1. It comprises a small group of members of which the most common are bira 'repeat' túma 'yet' téra 'just'. In structure Aux. 2 are identical with verbs. They may occur in an unelided form and may be prefixed by the full range of verb prefixes.

Clause Auxiliary verbs may function as the head of the verbal phrase. They may be modified by Aux. 1 and 2 and may be followed by the usual complementation and expansion places. They also function commonly in the serial construction without any complementation or expansion. They are often closely bound by a subordinating tone pattern to a following verb. In this position they do not carry a heavy information load. They comprise the verbs

kwú	'come'	tá	'go'
fona	'go'	bína	'get up'

Alternative treatments (1) Treat them as other verbs in the construction; this would mean that factors of (a) frequency (b) restriction of internal structure (c) tonal association (optional) with a following verb are not accounted for in the description.

(2) Treat them as Clause Auxiliaries. In their unexpanded form they may not function as the head of a clause but are treated as Auxiliaries to the Predicate. However there are then certain border-line cases where it is not clear whether a verb of this class is functioning as a Clause Auxiliary or as a free form since other verbs may also occur without expansions.

However the second treatment is felt to be preferable since it accounts for relevant facts and also reflects parallelism with Verb auxiliaries.

E.g. ɔ̀yɔ̀g ɔ̀fóna óyín ɛ́pyá (19.1)
friend went came market
S Paux P:mot Goal
S——————>

(ɔ̀d ɔ̀débа écírá:ŋá / ɔ̀kwu óké sá ɔ̀cátɔ̀g) tr. (19.4)
he-bought poison he-came put in food
P O / Paux P Ex.1
O——————————>
(S)——————————————>

kɛ́` ɔse óyɔ̀g sá / ɔ̀bína óta óyɔ̀g / ɔ̀yɔ̀g ɔ̀to / ɔ̀pé (20.4)
he saw friend there he-got up shot friend friend fell dies
S P O Ex.2 / Paus P O / S P / P
S——————————————> S——————>

Note:- Paux place would be filled by a verb phrase with one of these verbs as head.

Analysis of some sample Clause serial constructions:

/ indicates clause break
( )$^{tr/ditr/acc}$ indicates clause group. Clauses which interrupt the group are marked //cl//

Ditransitive:

(ɔ́gbánɔ́ká' ɲ́wó ɔ́tɔ́ga ɔ́tɔ̀g ḿvó / ɔ́náŋ íkwànɔ̀ŋ ɲ́wó) (117.3)
brother that took thing that gave woman that
S P:toga O / P:ditr IO
O——————>
S——————————>

Accompaniment:

(ɔ̀tɔ́ga ɛ́nɔ̀:nsó ńdó / ɔ̀tímá / ɔ́báná ḳ óbɔ̀n) (103.3)
he-took bird's head that took went to-village
P:tɔga O / P:tima / P:intr Ex.1
O——————>
(S)——————————————>

Inner Margin - - -
(114.1)

àlí bàba ɔ́ñá:ŋɛ / ɔ̀bé ṣa´ ɛ̀tákpá mín:à / ɔ̀ṣé bɛ̀ / c'ńd áṣóg ék̓pó' ḿbyó
Ali Baba moves-aside he-stands by rock so he-sees them as they put things those
S P:intr P Ex.1 Ex.2 P:tr O
S——————————————————>

```
                                                    Accompaniment:            Tran.
     ɔ̀t̩á   mákpár  / (ɔ̀ţɔ́ga  ɔ́kòrò  / òpe óyòg  èró) /  (ɔ̀ţɔ́ga è / ok̩é ña ís̩èg)
     he-went at-once  took  knife     cut friend head    took him  put in ground
       P:dir  Ex.2    P:tɔga  0       P:tr    0          P:tɔga 0  P:tr   Ex.1
                                                                 0——>
(S)——————————————————————————————————————————————————————————————————————————————

     ɔ̀nɔ̀:ŋa è                                                 (7.5)
     he-buried him
       P:tr  0
——>

                                                             Tran.
     (òbína ɔ́ţɔ́ga  ɛ́nɔ̀nsó'ńdó//òtúm épè mápyír // òyígá)                 (102.4)
      he-got- took bird's  that  dug   hole all      put-in
          up       head
          Paux P:tɔga  0       // P:tr  0        // P:tr
                      0————>                     ————>
(S)———————————————————————————————————————————————>

                                                             Tran.
     (át̩ɔ́ga   éśíkɔ́má'ńdó  c'   wúrá  k'  ákìmà / às̀òg  s̩á) / (àt̩ɔ́ga // áwònà //
     you-take hot-water    that  which you put     keep there  take     pour
      P:t̩ɔga         0 - - - - - - - - - - - -     P:tr Ex.1   P:t̩ɔga   P:tr
                     0——————————————  ———————————————————————————————————>
(S)——————————————————————————————————————————————————————————————————————————————
                  Accompaniment
     àrá:ƀa  áƀà)                                              (56.1)
     you-cook soup
     P:tr   0
——>
```

<u>Introductory Clause Composite</u>

+ Dependent cl ± bɛ́ + Speech/Clause

Where a speech functions as second element this is direct speech

Where a clause functions as second element this is indirect speech

A serial construction of which a Dependent clause is the last element may function instead of a Dependent clause as the 1st element of an Introductory clause composite.

```
     e.g.  òbèn  ìkwànɔ̀ŋ  kw̵ɛ́ / bɛ́ ɔ́káŋ  ókím̵á                   (133.4)
           he-told wife    his   that she-fry yam
             Dep.cl              bɛ    clause    (indirect speech)
```

òyòg ɔ̀bɛ́ / mɔ̀fóná kɛ̀ (16)
friend said we-go where?
Dep.cl Speech (direct speech)

Result Clause Composite

+ Indep cl + Indep cl

Where the Subject of the second clause has the same referent as one of the Post-predicate places in the first clause. This must be apparent through the repetition of the Subject referent or through concord.

e.g. máɓìra àkɔ́t' éc̀í ńdó mátɛ̀tɛ̀ má / ècí ńdó ébìra ètó
they-also cut tree that plenty tree that again fell
P:tr O Ex.2 / S P

ɔ̀dáƀ ña ɛ́ñàñà mátɛ̀tɛ̀ má / ɛ̀dɔ́:ƀ (116.2)
he-tied to horse plenty it-heavy
P Ex.1 Ex.2 P

Where prefix of second predicate shows concord with ɛ̀ñàñà

VIII STRUCTURE OF THE SENTENCE

A diagram of the structure of the sentence is given in order to show the places in which clauses may function in the sentence.

± Outer Margin ± Inner Margin$_1$ + Nucleus + Inner Margin$_2$

The Outer Margin may be filled by an Independent Indicative clause plus the initial feature -o. It may also be filled by minor-clause and non-clause elements.

The Inner Margins may be filled by a Subordinate Clause.

The Nucleus may be filled by an Independent clause.

Close-knit clause composites may function in any of the positions in which an Independent clause may function.

Negative formations in Mbembe

Present tense

	Subject	Predicate	Object	Location
1.	ŋ̀wà child	òdéƀ buys	éwùrɔ̀ dress	sɛ́ʔpyá in-market
2.		òƀór borrows	ɔ́nɔ́:má shirt	sɔ́ʔsɔ̀:m in-house
3.		ɔ̀náŋ gives		
4.		ògbóƀɔ́ washes		
5.		ɔ̀fɔ́:nɔ́ irons		

	Subject	Predicate	Object	Location
6.		ɔ̀kɔ́:gá shows		
7.		ɔ̀sá:má forgets		
8.		òrór wants		
9.		òsóg keeps		
10.		òkérɛ́ looks at		
11.		òkíƀɛ́ spoils		
12.		ɔ̀ságá puts down		
13.		òsóŋá knows/recognizes		
14.		ɔ̀tárá adds		

All these sentences can be formed which can be made by interchanging substitution items.

Structure of verb is verb-prefix (o/ɔ 3rd person sing.; ɔ before low vowels, o before high vowels.) + verb-root.

Subject and Location places are optional. Verb and Object obligatory.

Future Transformation

The above sentences can be turned into the future tense by changing the tone on the verb-prefix to high, and further prefixing the future prefix m-.

In addition, in sentences 8-14 the first (high) tone of the Object noun is slightly lower than the preceding high tone (downstepped). This is shown by '.

e.g. 1. ŋ̀wà módéƀ éwùrɔ̀ sɛ́!pyá 'the child will buy a dress in the market'

2. mórór'éwùrɔ̀ sɛ́!pyá 'she will want the dress in the market'

Perfective Negative Transformation:

Above sentences can be turned into the perfective negative by:

1) a change of word order from S V O Loc to S O Loc V;

2) the addition of the further prefix k- on the verb;

3) certain changes in the final vowel of the verb

verbs with final ɛ/ɔ in other tenses retain ɛ/ɔ in perf. neg. (4,5.10.11)

verbs with final a in other tenses lose this a in the perf. neg. (6,712.13.14).

verbs with no final vowel in other tenses add the final vowel ɛ/ɔ in perf. neg.

ɛ after a front vowel or a in the root

ɔ after a back vowel

In addition:

In sentences 1-7 the verb prefix o- becomes high tone with a downstep onto the verb root. All syllables of the verb root are high tone.

In sentences 8-14 the verb prefix o- becomes high tone. The pattern on the verb root is low tone followed by high tone. Where the verb root has two syllables, the first will be low, the second high. Where the verb root has only one syllable a low-high glide occurs on this syllable. (Glides are not normally a part of the tone system--this represents a compression of a word tone pattern onto one syllable):

E.g. 1. ŋ̀wa éwùrɔ̀ sɛ́!pyá kóɗéɓɛ́ 'The child didn't buy the dress in the market'

2. ŋ̀wa ɔ́nɔ́:má kɔ́ṡá:m 'The child didn't forget the dress'

8. ŋ̀wa éwùrɔ̀ kóròrɔ́ 'The child didn't want the dress'

13. ŋ̀wa éwùrɔ̀ kósǒŋ 'The child didn't recognize the dress'

Non-perfective Negative Transformation

Above sentences can be turned into the non-perfective negative by:

1) change of word order from S V O Loc to S O Loc V (as in perfective negative):

2) the further addition of the verb prefix m, with the retention of low tone on the prefix o-:

3) high tone on all verb roots.

E.g. ŋ̀wa éwùrɔ̀ mòdéɓ 'The child won't buy the dress'

ŋ̀wa éwùrɔ̀ mògbóɓɔ́ 'The child won't wash the dress'

ŋ̀wa ɔ́nɔ́:má sɔ́!sɔ́:m mòsóg 'The child won't keep the dress in the house'

ŋ̀wa éwùrɔ̀ mòsóŋá 'The child won't recognize the dress'

Note, further:

1) Change in word order: S V O Loc in indicative:
S O Loc V in negative

2) Changes in final vowels of the verb root:

Verbs with 'basic' final ɛ/ɔ retain this in perf. neg.;
Verbs with 'basic' final a lose this a in the perf. neg.;
Verbs with 'basic' no final vowel add final vowel ɛ/ɔ ;
in the perfective negative -ɛ follows front vowel or a in root,
-ɔ follows back vowel in root.

3) Verb tones: Two classes of verbs must be set up. In the present and in the non-perfective negative these are not distintive. In the future, Class 1 (1-7 'high' tone) verbs show no downstep after the verb onto the object noun, but Class 2 (8-14 'low' tone) verbs have downstep onto the first syllable of the noun.

Where the basic initial tone of the noun functioning as object is low it becomes high after a Class 1 verb in the future tense, but remains low after a Class 2 verb, but this is not illustrated here. In the perfective negative Verb-roots of Class 1 have high tone on all syllables, Verb-roots of Class 2 have the pattern low-high spread over one or two syllables.

The same illustration can be amplified to include the plural distinction: The verb-prefix for 3rd person plural is a- with same tones as in singular. In addition the clitic m- is prefixed to the verb in positive tenses: but to the object (in other clause types to the first complementation item- not illustrated here) in negative tenses. In the future plural, where it precedes the consonant m it carries low tone.

Examples (plural prefix m- underlined):

Present plural

ìvà màdéɓ éwùrɔ̀	'The children are buying the dress'
ìvà màkérɛ éwùrɔ̀	'The children are looking at the dress'

Future plural

ìvà m̀mádéɓ éwùrɔ̀	'The children will buy the dress'
ìvà m̀mákérɛ'éwùrɔ̀	'The children will look at the dress'

Perfective negative plural

ìvà méwùrɔ̀ káɗéɓɛ́	'The children didn't buy the dress'
ìvà méwùrɔ̀ kákèrɛ́	'The children didn't look at the dress'

Non-perfective negative plural

ìvà méwùrɔ̀ màdéɓ	'The children won't buy the dress'
ìvà méwùrɔ̀ màkérɛ́	'The children won't look at the dress'

In all examples where two vowels occur together elision occurs; the first vowel is lost, the second retained. In the examples given, elided vowels have no tone mark on top of them, signalling that they do not in fact occur in normal speech, but would occur in very slow speech.

Appendix II

PRELIMINARY NOTES ON SERIAL CONSTRUCTIONS IN KASEM

Kathleen Callow

CORPUS AND METHOD

The evidence for this preliminary survey is based on 100 serial constructions taken from running text, and all percentages and frequency counts are taken from this corpus. Conclusions were then checked against a larger body of material, and a few examples of features which did not appear in the counted corpus are taken from this extended corpus. The original 100 serial constructions were taken from three different texts covering a total of about 400 clauses (150 sentences), and the further corpus used for checking was probably slightly smaller than this.

REGULAR SERIAL CONSTRUCTIONS

Regular serial constructions are defined as those that consist of a primary clause followed by one or more secondary clauses in the same aspect. That is to say, a regular serial construction is either entirely in the non-continuous aspect (alias perfective, alias aorist), or entirely in the continuous aspect (alias imperfective, alias stative). In the counted corpus, 79 percent were non-continuous, 8 percent were continuous, making a total of 87 percent of the serial constructions which were regular.

Certain statements can be made concerning the structure of the clauses in a regular serial construction.

The primary clause may be any one of the neutral or non-terminal types described in connection with the clause matrix, below.

The secondary clause subject. All secondary clauses must have a pronoun subject agreeing in person number and class with the subject of the primary clause. Its tone is mid in non-continuous clauses, low in continuous clauses.

The secondary clause verb mood. In a non-continuous series, the verb is always in the consecutive mood; in a continuous series it is always in the non-future mood.

The secondary clause preverbal tagmemes. No preverbal tagmeme ever occurs other than the subject, which means that there is obligatory absence of the introductory and temporal tagmemes, and of all preverbal particles, including the negative ones. Consequently, 50 percent of the counted secondary clauses occurred in the minimum form, viz., S:Pn + Pred:V.

The secondary clause postverbal tagmemes. Postverbal tagmemes occur, apparently without restriction. 50 percent of the secondary clauses had a peripheral tagmeme. The object tagmeme was the most common, but location, agent, relational, and adverb tagmemes also occurred. The occurrence of these tagmemes seemed to bear no relation to the position of the secondary clause in the series, whether initial, medial, or final. While only one peripheral tagmeme normally occurs, it may be of any length (one object was 14 words long) and may include a rankshifted clause.

All attempts have failed* to state restrictions in terms of verb occurring in specified sequence. There is a tendency for the following verbs to occur in the final position in the series: dwey 'to exceed', gâali 'to exceed', gâra 'to be better', gān 'to fail', pā (+ 0) 'benefactive', ti̋y 'to finish'. These occur final in the series very regularly, but the non-continuous series consists essentially of a sequence of successive actions, and it is only necessary to add another action to reduce these verbs to medial position, e. g.,

áwìa dùwri ō gàali ápǔwri ō yíy sǒngo yíyga ō dàari ú
Awia ran he exceed Apuwri he reach house first he leave him
'Awia ran faster than Apuwri and reached the house before him.'

It is probable, however, that these verbs would always be final in a continuous construction, which describes simultaneous actions or states.

IRREGULAR (NON-FAVORITE) SERIAL CONSTRUCTIONS

Of the 100 counted series, 87 were regular, 10 involved a change of aspect, and 3, all following auxiliary verbs, were not capable of proof. The 10 cases involved an identical change, viz., a non-continuous series followed by one continuous clause in the final place. Seven of these 10 occurrences involved one verb, wí 'say', which is inherently continuous in aspect, and always occurs at the end of a series introducing speech. The other 3 described a state terminating a series of actions, e.g.,

òmù wú zàngi ō vò ò kàsīna gwàaru tùlù nà lȁna tú ō nūngi ō
tà sìgi mánkyūpīina níy nī...
'She would get up, put on her best [beautiful] Kasena clothes,
go out, and remain standing by the compound entrance...'

Two points should be noted about the continuous clauses terminating a non-continuous series:

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*[But see §2.2.2. for more recent success. KLP]

(a) they may have a particle between the subject and the predicate;

(b) there is an alternative construction in which the series is terminated before the continuous clause and the conjunction yí 'and' inserted, thus making a complex sentence. It is normal to form a complex sentence using yí whenever a construction is required which would break the series, by changing the aspect or by introducing a new subject in the same sentence. (Query: Does this imply that yí introduces a change of subject which is out of 'focus'?) E.g.,

zìmbāaru wúm mā vìn yí ò tà kěeyra
brother the - refused and he still crying
'The (older) brother refused and kept on crying'

mű ò nē tùtwéy dì gyèy dì sòli gùli yí dì nàbiyli sìn zwǐn
focus he saw mouse it sitting it stirring porridge and its tail washing calabashes
'He saw a mouse sitting stirring porridge while its tail washed calabashes'

STRUCTURE OF SERIAL CONSTRUCTIONS RELATED TO CLAUSE TYPES

Restrictions on the order of certain types

Non-terminal primary clauses must be followed by a series, and may be followed by a series of any type; terminal clauses cannot be followed by a series, and so far have been found following auxiliary primary clauses only. These restrictions may be summarized by the following chart. (Numbers refer to following illustrations.)

		SECONDARY CLAUSE		
		Non-Term.	Neut.	Term.
PRIMARY	Non-Term.	x (1)	x (2)	x (3)
CLAUSE	Neut.	x (4)	x (5)	-
	Term.	-	-	-

1. à pángi à yǎyni à vèy dá
I already I habit. I going there
'I have already been making it my practice to go there'

2. ō ma yǎyni ō zàngi ō vùw ō lòowri...
she - habit she rise she go she beg...
'As usual, she got up and went off begging...'

3. ò tà kōwri ò yi bābīa
he still contin. he is brave
'He was still as brave as before'
4. pě mā gyā ú ō pā ō zù ... dìyga
chief took him he give him enter room
'The chief made him go into a room'
5. zìmbāaru wúm mā zàngi ō swè ò yīra...
brother the - rose he wash his body...
'The older brother got up, took his bath...'

Restricted constructions with certain types

(a) Abilitative. This non-terminal type may not have a periphery of its own (i.e., in the primary clause), but frequently 'adopts' the periphery of the following secondary clause. The adopted tagmeme is usually the object (either pronoun or noun phrase) but the location has also been found. E. g.,

à daa bá wǎni ú ā bìy
I again will-not be-able her I raise
'I won't be able to bring her back to life again'

wùntú wú wǎni ō bìy ú
that-one fut be-able he raise her
'he will be able to bring her back to life'

ǹ wě kāana dìdè ǹ díy
you can wives many you eating
'you can marry many wives'

ǹ wě tīga nī ǹ vàra
you can ground on you hoeing
'you can hoe on (level) ground'

(b) Causative. This is the only clause type which must be followed by a different subject in the following secondary clause. Where this subject is a pronoun there is no other contrast with a regular series, but the subject of the secondary clause may also be a noun. This may point to the setting up of a complex series to handle this.

ò pē ā nūngi
he gave I go-out
'he made me go out'

ò pē kāani wúm nūngi
'he made the woman go out'

Impersonal verbs

There are certain clauses with the subject ku 'it' which have so far been handled as intransitive clauses, as they do not contrast with them in the primary clause place. However, they would be better handled separately as they have unusual functions elsewhere.

(a) They may occur as included (rankshifted) clauses, filling an object, time, or adverb place without breaking the series. E.g.,

...ō vùw ō lòowri kū māngi dí súwla fíǹtò ō gyā bà
he go he beg it approx. with shillings 30 he take come
'he went out and obtained 30/- by begging and brought it back'

(b) When they function as primary clauses, an allo-construction permits a following clause which is not possible in a regular series, as it changes the aspect and the subject, and has a negative particle.

kù dáani yí à wù nē ḿ (regular form)
it delayed and I not saw you
'it is a long time since I saw you'

kù dáani à wù nē ḿ (allo-form)

(c) There is a further construction, without any known allos, which also permits a following clause which is not possible in a regular series, as it may change the aspect (first example) and the subject. E. g.,

kù dà díbàm sàngi wùdíyu
it is-not us cooked food
'it wasn't us who cooked the food'

kù dè nōonu dȉdwǎ mú vèy ò làgi kāani
it is-not man one emph. goes he wants woman
'it isn't just one man who goes in pursuit of a wife'

Appendix III

PRELIMINARY PARADIGM OF SOME DEGEMA INDEPENDENT CLAUSES

Elaine Thomas

1. Basic independent clause types

1. Transitive
2. Intransitive
3. Ditransitive
4. Stative
5. Equative
6. Benefactive
7. Directive

2. Citation paradigm

1. ɔ́mɔ́-yɔ̀ mɔ̀-ɗɛ̂̀ ìsén
2. ɔ́mɔ́-yɔ̀ mɔ̀-ʋɩ́ɛ́
3. ɔ́mɔ́-yɔ̀ mɔ̀-kɩ̀ɛ̀ ɔ̀yɩ̀ ìsèn
4. ɔ́mɔ́-yɔ̀ ábꜝɔ́
5. ɔ́mɔ́-yɔ̀ ɔ̀-yɩ́n ɔ́mɔ́-mɔ̀sɩ̀

6a. ɔ́mɔ́-yɔ̀ mɔ̀-ɗɛ̂̀-kɛ̀ ɔ̀yɩ̀ ìsèn

6b. ɔ́mɔ́-yɔ̀ mɔ̀-ɗɛ̂̀-kɛ̀ ìsén mʋ́ ɔ́nɔ́mə̀ nɔ́ʋ̀

6c. ɔ́mɔ́-yɔ̀ mɔ̀-dɛ̀-kɛ̀ ɔ́nɔ́mə̀ nɔ́ʋ̀

7. ɔ́mɔ́-yɔ̀ mɔ̀-tà ɩ́ꜝtáɩ́n

3. List of lexical items

ìsén	fish	-y	emphatic
ɩ́ꜝtáɩn	wood	mɔ-	nonpast 3rd person singular, subject
ɔ́ꜝmɔ́	child	o-	3rd person singular, subject equative
-mɔ̀sɩ̀	male	-kɛ	benefactive
ɔ̀yɔ̀	him/her	mʋ	introductory particle for NP benefactive
ɔ́nɔ́mə̀	mother		
nɔ́ʋ̀	his		
aɓꜝɔ́	be there		
ɗɛ	buy		
kɩ́ɛ́	give		
tá	go		
vɩ́ɛ́	cry		
yɩ́n	be		

4. Translation of clauses
   1. The child buys fish.
   2. The child cries.
   3. The child gives him fish.
   4. The child is there.
   5. The child is a male.
   6.a. The child buys fish for him.
      The child buys fish for his mother.
      The child buys it for his mother.
   7. The child goes for firewood.

Paradigm of clause nuclei in contrastive tagmemic form

	Subject	Predicate	I. O.	D.O.	Compl.	Benefactee	Goal
Trans.	± NP pro	+ Trans VP		± NP pro			
Intrans	± NP pro	+Intrans VP					
Ditrans[1]	± NP pro	+Ditrans VP	+pro	± NP			
Stative	± NP pro	+Stative VP					
Equative	± NP pro	+Equative VP			+NP pro		
Benefac.	± NP pro	+Benefac. VP	±pro	± NP ← or →		± NP Ben	
Directive	± NP pro	+Direct. VP					± NP

Note

1. If the I.O. is a personal noun a transformation into a serial clause is required.

   Example 'The child gave his mother meat'

   ɔ́mɔ́yɔ̀ ɔ̀vɔ́n !ísén ɔ̀vɔ́ yí kíɛ́n ónómə̀ níʋ̀
   child took fish took gave mother his.

Marginal places

All basic clause types may be expanded by optional marginal places which may be diagrammed as follows:

± Ex.1: time phrase +Nucleus ±Ex.2:manner phrase ± Ex.3:loc. phrase
± Ex.4: time phrase / temporal

Fillers of places

(a) Subject, Object and Complement places.

i. NP +Head ± Mod ± Num ± Poss. ± Dem.

So far only 2 attributes have been found in one phrase.

Examples	ìsén ívè nɔ́ʊ̀	'his 2 fish'
	ìsèn vì nɩ́ɩ̀nà	'these good fish'

ii. NP composite

Appositional	ɔ́mɔ́yɔ̀ Ámádè	'the boy Amade'
Co-ordinative	ɔ́mɔ́yɔ̀ nʊ̀ ónómə nɔ́ʊ̀	'the boy and his mother'
Relative	ɔ́mɔ̀ nʊ́ ɔ̀tán mékìyò child who went to market	

iii. Independent Pronoun

ʊ́m!ɛ́	'I'[1]	ènì	'we'
ʊ́w!ɔ́	'you sing.'[1]	ʊ́!máɩ́	'you pl.'
ɔ̀yɩ́	'he/she'	ʊ́!ɓá	'they'

Note

1. 1st and 2nd person singular. object ∝ I.O. are expressed by a verb suffix.

mɔ̀-mɔ̀n-mɛ́	'he sees me'
mɔ̀-ɗɛ̀-kʊ̀-mɛ́	'he buys (it) for me'

(b) Predicate place

The filler of the predicate place is a verbal phrase with a verb of the appropriate class as its head. The VP may be diagrammed as follows:

± Aux 2 ± Aux 1 + Verb

Examples	ɔɗa A.2.	sɩ A1.	ɗɛ vb	'so, he still buys'
	ɔvɔ A.2	ka A.1.	ɗɛ vb	'he takes also buys'

(c) Benefactee place

The filler is a NP of which the head must be a personal noun (see under a). The NP is preceded by the particle mɯ if the D.O. is expressed.

(d) Goal place

The filler is a NP (see under a)

(e) Expansion places

Ex. 1 and 4 may be filled by

(i) time phrase óhò áwɩ́yɛ̀yɔ̀
time morning

(ii) temporal ínínè today ú!ɗé yesterday/tomorrow

Ex. 2 is filled by a manner phrase

ɯ̀ɓɔ̀	díèr	'badly'	(lit. hand bad)
ə́kù	vì	'well'	(lit. method good)

Ex. 3 is filled by a locative phrase consisting of a NP preceded by the particle mɯ

mɯ́ ékì 'at/in the market'

7. Verb chart

Prefixes		Root	Suffixes	
tonal	tense/aspect		derivational	inflectional
neg.$_1$ subj.$_2$	past$_3$ nonpast$_3$		-ne 'of own accord' -se 'causative' -kine 'reciprocal' {-vtii} 'repetition' -ke 'benefactive'	-te completive {-Vn} perfect -tə habitual -mun not again

Notes on the verb chart

1. Negative is shown by an extra high tone on the tense/person prefix.
2. Subjunctive is shown by a high tone on the tense/person prefix.
3. Matrix of tense/person prefixes

	Singular			Plural		
	1	2	3	1	2	3
Past	mi-	u-	o-	e-	ə-	e-
Nonpast	me-	mu-	mo-	me-	mə-	me-

4. There is vowel harmony throughout the verb word between the following 2 sets of vowels; the vowel of the root determines the set used.

tense set	i	e	ə	o	u
lax set	ɩ	ɛ	a	ɔ	ʊ

Examples to illustrate the verb chart

mɛ̀-ɗɛ́	'I will buy/buy'
mɩ-ɗɛ́!ɛ́n	'I bought'
ʊ̂-ɗɛ́-v́ɩ!ɩ́	'you bought often'
+ɔ-ɗɛ̂	'he does not / did not buy'
ɛ́-!ɗɛ́	'we should buy'
+a-ɗɛ̂-mʊ̀n	'you did not buy again'
ɛ̀-dɛ́-!tɛ́	'they bought already'

The extra high tone of the negative is shown thus +.

Appendix IV

GRAMMATICAL PROSODIES ??

John T. Bendor-Samuel

Can any features be found within a grammatical system which correspond to the prosodies found in a Firthian type of analysis of a phonological system[1]. To answer this question we must first ask what phonological prosodies are[2]. What features of the phonological structure are handled as prosodic?

Prosodies in Firthian analysis are phonological features which either extend over more than one segment of a structure or have implications over more than one segment. Either they cannot be adequately assigned to a single segment or alternatively if occurring as an isolatable single segment they have an implication for the structure as a whole, e. g., marking the boundary of a phonological word. This second type of prosody resembles Trubetzkoy's 'Grenzsignale'.

Are there grammatical features which parallel this? First, are there grammatical features which can be said to extend over more than one segment in the grammatical structure. Such a question presupposes that it is possible to set up grammatical segments which correspond to the phoneme segments of phonology. Any given grammatical structure can be viewed as a series of units in certain relationships to each other. Each unit would correspond to the phoneme segments in phonology. Thus a clause can be viewed as consisting of phrases and a phrase as consisting of words. The segments of the clause would then be the phrases and the segments of the phrase the words.

The question would then be, are there grammatical features which extend over more than one phrase in a clause or over more than one word in a phrase? As a rather simple and limited example, the singular/plural contrast extending over both the nominal and the verbal phrase in an English clause might be adduced, as in

The boy is eating
The boys are eating

The contrast singular/plural can be seen to extend beyond the one phrase and in fact marks both the phrases which can be said to make up such a clause. The clause can then be said to be marked as singular/plural and a grammatical prosody of singular/plural could be set up.

The usefulness of such an analysis in English is rather reduced by the fact that the object nominal phrase is also marked by the singular/plural contrast as in

The boys are eating the melon
The boys are eating the melons

So there would still have to be a category singular/plural at the phrase level as well as the clause level.

A much more extended and convincing instance of this occurs in languages with a 'concord system'. In Etung[3] phrases such as the following occur. (Hyphens mark morpheme boundaries and tone is omitted):-

e-yu	jɨ - t	bi - yu	bi - bae
yam	one	yams	two
e-yu	an - ji	bi - yu	am - bi
yam	that	yams	those
e-yu	ej - e	bi - yu	eb - e
yam	his	yams	his
e-yu	n - ji	bi - yu	m - bi
yam	this	yams	these
ŋ-kae	yo - t	o - fak	bɨ - t
wife	one	broom	one
ŋ-kae	ow - e	o - fak	ob - e
wife	his	broom	her
ŋ-kae	n - ño	o - fak	m - bi
wife	this	broom	this

Each phrase consists of two words and each word includes a prefix or suffix. The type of analysis proposed here would state that such phrases consist of two main elements (the two words), together with one of a series of concord prosodies. These concord prosodies are realized by the affixes. The selection of one out of the set of concord prosodies is determined by the class of the noun head of the nominal phrase.

Concord in Etung extends beyond the single phrase to include nominal and verbal phrases. Clauses such as the following occur: -

e - yu	jɨ - t	e - man
yam	one	is finished
bi - yu	bi - bae	bi - man
yams	two	are finished
ŋ - kop	yɨ - t	a - man
box	one	is finished
o - fak	bɨ - t	o - man
broom	one	is finished

The concord prosodies extend over the subject nominal phrase and verbal phrase. Thus the clause as a whole is marked by the concord not just the phrase. In a full treatment of Etung it would be necessary to state these concord features as operating as a feature of certain clauses and phrases.

Another type of extension occurs in clauses in Bimoba[4]. A conditional clause is identical in structure to an independent clause except that it is marked by the particle i and/or tii which occurs after the nominal phrase subject and before the verbal phrase, together with a low tone on the final syllable of the clause. Sometimes the particle i occurs more than once in the clause, occurring as the final syllable of some of the verbal particles. The combination of particle(s) and low tone must be regarded as the exponent of the single grammatic category of "conditional". Instead of considering such a particle as a unit of the structure of the clause, which would raise problems since it is clearly not a phrase, it is simpler to regard it as a part of a type of grammatical prosody. The prosody would include the repeated occurrences of the i particle and the final low tone.

Examples:

kɔjok i dii napayoŋ gbanì ŋɔi saa mɔk n bik na
cock if cat stone one finish he future marry my daughter this
"If the cock finishes eating one stone, he will marry my daughter."

m i bo i biak i saa saȁ Naliatùk lə bo siiŋa
I if immediate again future go Nalerigu it immediate better
"If I were to go to Nalerigu again it would be better."

What of the other type of prosody - that which though not extending over more than one segment has implications for the structure as a whole.

In many West African languages there are particles which can be regarded as playing just such a role. To take another Bimoba example, the general subordinative clause is marked by the particle a (after pronouns) or mba (after nouns). It is difficult to describe these particles as being either themselves phrases or as being a constituent part of any other phrase in the clause. To assign them to the nominal phrase or verbal phrase seems quite arbitrary and their function is to mark the clause as a whole. This point is further illustrated since when a series of verbal phrases combine to make a serial clause the particle only occurs once. These particles may then be said to have an implication of subordination for the structure in which they occur. This is in fact the only way in which many subordinative clauses are distinguished from other types of clause. Instead then of giving them the status of grammatical unit it seems simpler to handle them as grammatical prosodies.

Examples

o a	won	wuur	gben	ti	won	jɔɔb	ti	sanjok
he	yesterday	washed	finished	we	yesterday	took	our	road

"Yesterday as he finished washing, we started on our way."

bantɔŋ	mba	din	poon	ɔ	na	ɔ	din	wɔb		nɔ	pɔntr
crocodile		remote past	made	him		he	remote past	put back	on	with him	frog

"As a crocodile make him cross the river, he put a frog on his back."

In many languages a problem often arises as to where segmentation into grammatical units should be carried out. Take for instance, the English phrase "cats and dogs". Clearly the two main units in the construction are the two nouns. What of "and"? Is it a third unit? If so, what is the status of 'and' in the phrase "men, women and children"? To treat it as merely the third unit in a string of four equal segments seems inadequate since though its physical realization may be after the second noun its function is to link the first noun to the second just as much as the second noun to the third. In fact it signals the co-ordinate relationship of all three nouns[5]. Furthermore what is the status of "and" when linking two clauses. It can hardly be regarded as belonging to either of the two clauses. How much simpler to regard "and" as a feature of the construction as a whole marking the co-ordinate relationship of the main elements concerned.

The term "grammatical prosody" may be ill-chosen. Prosodists may disown it. "Syntagmatic features" might be a less provocative term. Whatever the label, however, it seems there are grammatical features which are not well handled by the usual segmentation into constituent parts of the construction. Let them be handled as features of the total structure and not forced into an arbitrary segmentation.

FOOTNOTES

[1] This note arises in part from the two workshops conducted by Dr. K. L. Pike under contract 5-14-065 of the U. S. Office of Education, through the Center for Research on Language and Language Behavior, of the University of Michigan. The underlying research on West African language has been carried out as a member of the Summer Institute of Linguistics in association with the Universities of Ghana and Nigeria.

[2] For an introduction to the theory of prosodic analysis see J. R. Firth, "Sounds and Prosodies", Transactions of the Philological Society, 1948, pp. 127-152; and R. H. Robins, "Aspects of Prosodic Analysis", Proceedings of the University of Durham Philosophical Society, Volume I, Series B, No. 1 (1957). For an example of this type of analysis applied to a language see my "Some problems of segmentation in the phonological analysis of Tereno", Word, Vol. 16, No. 3, pp. 348-355 (1960).

[3] I am indebted to my S.I.L. colleagues, Mr. and Mrs. T. Edmondson, for the Etung material used in this illustration.

[4] For further details of this and the other Bimoba examples quoted in this note, see my 'Problems in the analysis of sentences and Clauses in Bimoba' to be published shortly in Word. I am indebted to my colleagues, Miss G. Jacobs, for the Bimoba material.

[5] Compare R. S. Pittman's treatment of conjunctions in "A grammar of Tetelcingo (Morelos) Nahuatl", Language Dissertation No. 50, 1954. In setting up the category of 'valence', in contrast to morpheme, he regards conjunctions as 'valence-carrying' morphemes. Valence is used particularly for the relationship between two immediate constituents, whether overtly or covertly expressed. Conjunctions would exemplify overt valences carried by morphemes.

Appendix V

NOMINAL AND VERBAL GROUP MATRICES FOR KASEM

J. C. Callow

NOMINAL GROUP MATRICES

There are four major nominal groups (i.e., pairings of singular-plural classes) in Kasem, but only C and D are demonstrated here.

GROUP C

For this group, the singular suffix is a central vowel, the plural suffix a front vowel, the phonemic quality being determined entirely by the stem phonology.

Consonant-final stems

Stems with a final /d/ are taken for illustrations in the singular below. On the left is a matrix of all such stems, and on the right is the matrix of the singular forms, arrived at by adding the central vowel suffix to the stem.

d- final stems

Upper Harmony	Cid-		Cud-
	Ø	Cəd-	Cod-
Lower Harmony	Cɩd-		Cɷd-
	Ø	Cad-	Cɔd-

+ { Cen. V 'sg.' } →

d-final stems, singular form

Cidə^{1}		Cudə^{2}
Ø	Cədə^{3}	Codə^{4}
Cɩda^{5}		Cɷda^{6}
Ø	Cada^{7}	Cɔda^{8}

The Ø signifies systemic non-occurrence, i.e., /e/ and /ε/ cannot occur in stems of this general shape; the numbers refer to the examples below.

1.	bidə	'wall'	5.	fɩda	'cane'
2.	kukudə	'dog'	6.	zɷda	'poor (person)'
3.	bəkədə	'boy'	7.	sada	'mat'
4.	kodə	'voice'	8.	mɔda	'pus'

Now note: (1) The topology (overall pattern) of the harmonies is the same, and this is true throughout the language. So, replace i and I by the cover symbol I; ə and a by A; o and ɔ by O; u and ɷ by U. (2) To repeat the above matrix formula for each of the 5 final consonants (d, l, n, ŋ, g) would be redundant and inelegant, so reduce to one matrix formula by having one final consonant per row, one stem vowel per column.

Singular matrix for Nominal Group C, consonant-final stems (columns arranged by vowel quality)

Consonant-final stems

CId-	CAd-	COd-	CUd-
CIl-	CAl-	COl-	CUl-
CIn-	CAn-	COn-	CUn-
CIŋ-	CAŋ-	COŋ-	CUŋ-
CIg-	CAg-	COg-	CUg-

+ cen. V→

Consonant-final stems, singular form

CIdA	CAdA	COdA	CUdA
CIlA	CAlA	COlA	CUlA
CInA	CAnA	COnA	CUnA
CIŋA	CAŋA	COŋA	CUŋA
CIgA	CAgA	COgA	CUgA

Having established this general pattern of matrix, the plural, which is more complicated, can be exhibited in the same way.

Plural matrix for Nominal Group C, consonant-final stems

CId-	CAd-	COd-	CUd-
CIl-	CAl-	COl-	CUl-
CIn-	CAn-	COn-	CUn-
CIŋ-	CAŋ-	COŋ-	CUŋ-
CIg-	CAg-	COg-	CUg-

+ Fr. V ⟶

CIdI	CAdI	COdI	CUdI
CIlI	CAlI	COlI	CUlI
CInI	CAnI	COnI	CUnI
CwI/Ĩ	CE	CwE	CwI/Ĩ
CI	CE	CwE	CwI

Consonant-final stems, sg. form (N.G. The examples will follow the columns of the matrix, and then the rows)

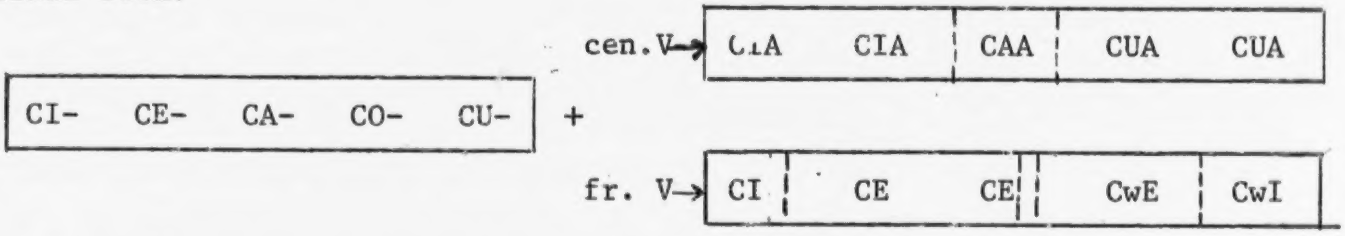
bidə	'wall	bəkədə	'boy'	kodə	'voice'	bɷda	'fishing-net'
kikilə	'round'	fələ	'white man'	golə	'fish hook'	fulə	'granary'
mɩmɩna	'an ant'	cana	'month'	bɔna	'mosquito'	ŋɷna	'rope'
jɩŋa	'hand,arm'	bəŋə	'beam'	coŋə	'path'	zɷŋa	'calabash'
digə	'room'	yaga	'market'	kɔga	'back'	bugə	'river'

Consonant-final stems, plural form (meanings as above)

bidi	bəkədi	kodi	bɷdɩ
kikili	fəli	goli	tuli
mɩmɩnɩ	canɩ	bɔnɩ	ŋɷnɩ
jɩ/jɩ̃	be	cwe	zwɩ/zwɩ̃
di	yɛ	jwɛ	bwi

Singular and Plural matrices for vowel-final stems in Nominal Group C

The vowel-final stems can be handled in a similar manner, except that there is only one row, and there are five columns, as CE- occurs as a vowel-final stem.



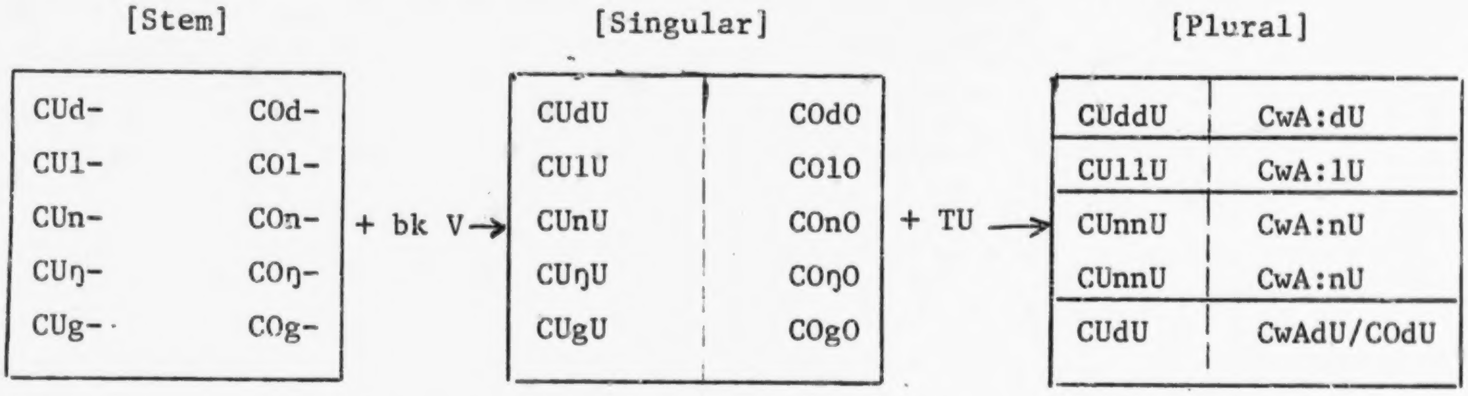
Vowel-final stems, Nominal Group C, sg. and pl. forms

sg.	vĩa	'poison'	piə	'sheep'	daa	'stick'	yuə	'hair'	nɷa	'finger'
pl.	vĩ		pe		dɛ		ywe		nwι	

Group D

For this group, the singular suffix is a back vowel, and the plural suffix one of the three alveolar medial consonants (d, l, n) followed by a close back vowel. As before, the phonemic shape of the suffixes is determined by the phonological shape of the nominal stem.

Singular and plural matrix for Nominal Group D, consonant-final stems



Consonant-final stems, Nominal Group D, singular and plural

sg.		sg.		pl.	pl.
mɷdɷ	'thousand'	kodo	'calabash for milk'	mɷddɷ	kwəədu
culu	'taboo'	bolo	'valley'	cullu	bwəəlu
fɷfɷnɷ	'speckled'	tɔnɔ	'skin, paper'	fɷfɷnnɷ	twaanɷ
yituŋu	'stool'	n͠oŋo	'lion'	yitunnu	n͠wəənu
kɷgɷ	'animal hair'	dɔgɔ	'clay'	kɷdɷ	dwad / dɔdɔ

Vowel-final stems, Nominal Group D

(For symbols in matrix representing analysis of this group, see final composite chart of the nouns)

sg. (-U)	pl. (-TU)	
piu	piidu	'rock'
sιɔ	sεεdɷ	'shea-nut'
maaɷ	maad	'catapult'
vɔɔ	vɔɔdɷ	'leaf'
tuu	tuudu	'elephant'

NOMINAL GROUP B1

Stems, Nominal Group B1

(For matrix see following composite chart; group B2, not illustrated here, includes just a few irregular forms)

sg. (-I)	pl. (-A)	
tidi	tidə	'forehead'
wadι	wada	'mud brick'
pori	porə	'okro' (sometimes spelled 'okra')
kuri	kurə	'stone for cooking on'

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nəbili	nəbilə	'tail'
yəli	yələ	'tooth'
goli	golə	'club (for driving animals)'
gɷlι	gɷla	'millet porridge'

---

bιnι	bιna	'year'
banι	bana	'anger'
tɔnι	tɔna	'beard'
kuni	kunə	'knot'

……

---

pι	pιa	'yam'
dε	da	'day'

……

gwe	gwə	'cola nut'
nakwι	nakwa	'elder'

COMPOSITE NOMINAL MATRIX

Having produced a considerable variety of smaller matrices, the question naturally arises--is it possible to devise some form of matrix which would display the whole noun class system at once? This will not be attempted here, but the following matrix does cover nominal groups B1, C, and D; A has been omitted for the time being as it is much more complicated and irregular (also, in A, nouns derived from verbs have been omitted as they also introduce stem patterns not otherwise found in the nouns).

VERBAL GROUP MATRICES

There are four verb groups (i.e., pairings of Perfect-Imperfect classes) in Kasem, labelled A to D in the cells of the matrix defined* as follows:

		Impf.-Absolute**	
		-A	-I
Perf.-Abs.	-A	A	B
	-I/∅	D	C

Further, all the morphological forms (which function verbally, i.e., not nominalizers) exhibited by any verb can be exhibited on a matrix of the following pattern:

			MOOD	
			Past	Future
ASPECT	Perf.	Abs.		
		NAbs.		
	Imperf.	Abs.		
		NAbs.		

Each of the verb groups, then, will be displayed in this matrix to show the considerable variety of pattern that results, restricting the material, however, to consonant-final stems.

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*Definition, here, is accomplished by giving the minimal criteria needed to characterize a class. This can be done by noting just two appropriately-selected words of the paradigm, in respect to the vowel of the suffix. The suffix vowel is indicated by a cover-symbol A (not to be confused with the class label A inside the matrix) or I outside the matrix, representing upper or lower harmonies. By turning to the last (composite) chart of verb groups, the reader can see that first and fourth rows contain perfect past absolute and imperfect absolute respectively. In the rows, within the columns, under the appropriate class symbols, the two defining forms are found. No further

STEM SHAPES	NOMINAL GROUPS					
	B1		C		D	
	-I sg.	-A pl.	-A sg.	-I pl.	-U sg.	-TU pl.
CId-	CIdI	CIdA	CIdA	CIdI	Ø	Ø
CAd-	CAdI	CAdA	CAdA	CAdI	Ø	Ø
COd-	COdI	COdA	COdA	COdI	COdO	CwA:dU
CUd-	CUdI	CUdA	CUdA	CUdI	CUdU	CUddU
CIl-	CIlI	CIlA	CIlA	CIlI	Ø	Ø
CAl-	CAlI	CALA	CAlA	CAlI	Ø	Ø
COl-	COlI	COlA	COlA	COlI	COLO	CwA:lU
CUl-	CUlI	CUlA	CUlA	CUlI	CUlU	CUllU
CIn-	CInI	CInA	CInA	CInI	Ø	Ø
CAn-	CAnI	CAnA	CAnA	CAnI	Ø	Ø
COn-	COnI	COnA	COnA	COnI	COnO	Cwa:nU
CUn-	CUnI	CUnA	CUnA	CUnI	CUnU	CUnnU
CIŋ-	Ø	Ø	CIŋA	CI/Ĩ	Ø	Ø
CAŋ-	Ø	Ø	CAŋA	CE	Ø	Ø
COŋ-	Ø	Ø	COŋA	CwE	COŋO	CwA:nU
CUŋ-	Ø	Ø	CUŋA	CwI/Ĩ	CUŋU	CUnnU
CIg-	Ø	Ø	CIgA	CI	Ø	Ø
CAg-	Ø	Ø	CAgA	CE	Ø	Ø
COg-	Ø	Ø	COgA	CwE	COgO	CwAdU/COdU
CUg-	Ø	Ø	CUgA	CwI	CUgU	CUdU
CI-	CI	CI A	CIA	CI	CIU	CI:dU
CE-	CE	CA	CIA	CE	CIO/U	CE:dU
CA-	Ø	Ø	CAA	CE	CA:U	CA:dU
CO-	CwE	CwA	CUA	CwE	COO	CO:dU
CU-	CwI	CwA	CUA	CwI	CUU	CU:dU

---

forms are needed to separate the words into classes--but many further forms are needed to describe concomitant variants--KLP

**The absolute form usually precedes zero or some variety of juncture; it is not followed by forms in closest-knit relation to it.

VERB GROUP A

Verb Group A is divided into four subgroups according to the pairing of the stem-final consonants in the Perfect and Imperfect as follows: g-d, g-n, g-zero, n-n.

Verb Subgroup A1

		Past	Fut.		Past	Fut.	
Pf.	Abs.	CVgA	CV	e.g.,	vàga	và	'to farm, hoe'
	NAbs.	CVgI	CV		vàgι	và	
Impf.	Abs.	CVdA	CVdA		vàda	vàda	
	NAbs.	CVdI	CVdI		vàdι	vàdι	

Verb Subgroup A2

		Past	Fut.		Past	Fut.	
Pf.	Abs.	CVgA	CV	e.g.,	ŋɔ̀ga	ŋɔ̀	'to steal'
	NAbs.	CVgI	CV		ŋɔ̀gι	ŋɔ̀	
Impf.	Abs.	CVnA	CVnA		ŋɔ̀na	ŋɔ̀na	
	NAbs.	CVnI	CVnI		ŋɔ̀nι	ŋɔ̀nι	

Verb Subgroup A3

		Past	Fut.		Past	Fut.	
Pf.	Abs.	CVgA	CV	e.g.,	lɔ̀ga	lɔ̀	'to build'
	NAbs.	CVgI	CV		lɔ̀gι	lɔ̀	
Impf.	Abs.	CVA	CVA		lɔ̀a	lɔ̀a	
	NAbs.	CV	CV		lɔ̀	lɔ̀	

Verb Subgroup A4

		Past	Fut.		Past	Fut.	
Pf.	Abs.	CVnA	CV/Ṽ	e.g.,	dɷ̀na	dɷ̀/ɷ̃	'to chew'
	NAbs.	CVnI	CV/Ṽ		dɷ̀nι	dɷ̀/ɷ̃	
Impf.	Abs.	CVnA	CVnA		dɷ̀na	dɷ̀na	
	NAbs.	CVnI	CVnI		dɷ̀nι	dɷ̀nι	

VERB GROUP B

		Past	Fut.		Past	Fut.	
Pf.	Abs.	CVgA	CV	e.g.,	tága	tá	'to shoot'
	NAbs.	CVgI	CV		tágI	tá	
Impf.	Abs.	CVI	CVI		tɛ́	tɛ́	
	NAbs.	CV	CV		tá	tá	

VERB GROUP C

		Past	Fut.		Past	Fut.	
Pf.	Abs.	CVn/$_{\text{ŋ}}$I	CVn/$_{\text{ŋ}}$I	e.g.,	bǒŋi	bǒŋi	'to call'
	NAbs.	CVn/$_{\text{ŋ}}$I	CVn/$_{\text{ŋ}}$I		bǒŋi	bǒŋi	
Impf.	Abs.	CVI	CVI		bwě	bwě	
	NAbs.	CV	CV		bǒ	bǒ	

VERB GROUP D [The most commonly-occurring class--though with fewest contrasts within the system]

		Past	Fut.		Past	Fut.	
Pf.	Abs.	CVCI	CVCI	e.g.,	tɔ́gɩ	tɔ́gɩ	'to follow'
	NAbs.	CVCI	CVCI		tɔ́gɩ	tɔ́gɩ	
Impf.	Abs.	CVCA	CVCA		tɔ́ga	tɔ́ga	
	NAbs.	CVCI	CVCI		tɔ́gɩ	tɔ́gɩ	

COMPOSITE VERBAL MATRIX

Having displayed the different verb groups separately, it is now interesting to ask whether the whole system can be displayed on a single matrix, so as to make comparison between the groups easier, and perhaps comparisons with other languages. This is attempted in the following matrix.

Matrix for all verb groups, consonant-final stems only

			VERB GROUPS						
			A1	A2	A3	A4	B	C	D
PERFECT	Past	Abs.	CVgA	CVgA	CVgA	CVnA	CVgA	CVn/$_{ŋ}$I	CVCI
		NAbs.	CVgI	CVgI	CVgI	CVnI	CVgI	CVn/$_{ŋ}$I	CVCI
	Future		CV	CV	CV	CV/$\tilde{V}$	CV	CVn/$_{ŋ}$I	CVCI
IMPERFECT		Abs.	CVdA	CVnA	CVA	CVnA	CVI	CVI	CVCA
		NAbs.	CVdI	CVnI	CV	CVnI	CV	CV	CVCI
No. of Contrasts			5	5	4	3	4	3	2

Notice two interesting features demonstrated in this matrix: (1) With one exception, there is a decreasing number of contrasts in the successive columns, or, put in another way, there is increasing neutralization. Even so, the contrast between Perfect and Imperfect is maintained in every case, when Absolute, so this leads to the assumption that this is the fundamental contrast in the verb system. (Cf. singular and plural in the nouns.) (2) The 8-hole matrices used above have been condensed to a 5-row column vector, as there are never more than 5 contrasts for any verb. Notice how unevenly distributed the contrasts are. Thus, there is no past-future distinction in the Imperfect; and there is no Absolute-Non-Absolute contrast for the Future.

If the question is asked--where does the Imperative fit in? The answer would be that so far as the Imperfect is concerned there would be no change, but in the Perfect it would form a three-way contrast with the Past and Future, and, like the Future, would have no Absolute-Non Absolute contrast.

Appendix VI

NOUNS OF ETUNG* CLASSIFIED BY THEIR SINGULAR-PLURAL PREFIX PAIRS

Eileen Edmondson

[The stems are first subdivided according to the prefixes which mark their singular versus plural forms. Within this grouping, stems are subdivided according to the tone patterns which cover the word as a whole. The tone pattern is given only once, for the class, (determined by the stems), since the tone of the word in singular form is the same as in the plural form (if /è/ is low, /bì/ is low: if /é/ is high, /bí/ is high).

Loans--Ø to /ba/--are not included.]

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*Dialect of Bendeghe Ayuk in Ogoja Province, Nigeria. Informant: Moses Ábáng Éꜝtá.

ɛ 'Mass' Nouns (57 items)

ˋˋ or ˋˋˋ

eban	'	dislike.
ebiŋ	'	call.
eboge	'	time.
ebok	'	willful accusation.
ečiri	'	stupidity.
ediri	'	tramp.
efɨt	'	ill temper.
efi	'	kind of plant.
egome	'	snore.
ege	'	frequent cry.
egɨbe	'	reference, mention.
ejen	'	travelling.
ejok	'	noise.
ekin	'	alligator used in grinding snuff.

ˋˊ or ˋˊˊ

ebaŋɨm	'	cracking of corn.
ebarɨm	'	shining, growing wild.
ebat	'	light.
ebɨbe	'	dust.
ebɨmɨm	'	hiding oneself.
ebumum	'	being drunk.
ečomɨm	'	being insane.
efet	'	chance.
efuŋ	'	kind of rope.
ejim	'	onion.
ekɨp	'	srew-pine.
ekiŋ	'	native guitar.

ˋˆ or ˋˊˋ

ebɨt	'	privacy.
ečene	'	break in rainy season.
ečit	'	ooze.
efep	'	air.
ejiri	'	darkness.
ejü	'	stealing.
eka	'	semen, stale food.
ekok	'	harmattan.
erik	'	time.
eyo	'	sleep.

ˋˇ or ˋˋˊ

ebigim	'	satisfying.
ebogɨm	'	adding.
ebü	'	intercourse.
eket	'	destitution.

ˊˊ or ˊˊˊ

ebo	'	reptile in fable.
ečabe	'	disgrace.
egbut	'	swelling disease on the hand.
ekap	'	mark of ring worm or leprosy.
ekɨt	'	kind of soft cocoyam.
ekpaŋ	'	dish made from cocoyam.
ere	'	out-side.

ˊˋ or ˊˋˋ

efoge	'	that which prevents.

ˋˆ or ˊˊˋ

esebe	'	sand.

e 'Mass' Nouns Con't

ˋˋ or ˋˋˋ	
ekpin	' life.
epit	' superciliousness.
eriri	' deceitfulness.
eyük	' cold.

Others.	
^ˋebek	' sweet alligator.
éḱáǵasi	' that which is quiet, gentle and polite person.
éḱíb́íkibi	' that which is cut into particles.
ém̂êe	' grass land.

e- to ni- (48 items)

ˋˋ or ˋˋˋ	
ebam	' bag.
efare	' trip, giddiness.
egan	' bundle.
ekam	' company, age group.
ekpa	' mat.
ekpak	' kind.
etam	' hat.

ˋˊ or ˋˊˊ	
ebamˋ	' compound.
ebaŋe	' iron-thing.
ečoe	' load.
efuk	' axe.
ejiŋ	' pile, heap (alternate plural in bi-).
erɨm	' pod.
eroŋ	' line.
esɨn	' trunk, stalk.
esum	' clearing.
etek	' village, region.
etɨm	' bush.

ˊ^ or ˊˊˋ	
ečan	' electric fish.
efo	' cloth.
ekun	' spiny fish.
ekpaŋ	' hamper.

Others		
ˊˋ^	esoŋe	' worm.

ˋˇ or ˋˋˊ	
ebɨt	' soft cocoyam.
ebin	' farm.
ečue	' heap, mass.
efe	' mirror, globe.
efɨge	' fan (alt. plural in bi-).
efut	' feather.
ekim	' deep pool.
ekup	' parcel.
esome	' comb.
etɨm	' hut, shelter.
eyom	' hoe (alt. plural in bi-).

ˊˊ or ˊˊˊ	
ebuge	' tray for loads.
ebune	' mud-bed.
ekoŋ	' spine (fruit edible).
ekpɨme	' bottle.
etage	' flat basket for drying pepper.

ˋ^ or ˋˊˋ	
ebɨn	' dance (alt. plural in bi-).
ebi	' palmnut.
ebum	' heap (alt. plural in a-).
efɨt	' definite length of cloth.
ekim	' half: part which is short.
ekon	' song.
etum	' work.
eya	' year.

e- to bi- (140 items)

Tone class ˋˋ or ˋˋˋ		
eba	'	fetter.
ebage	'	kind of monkey.
ebe	'	belch.
ebi	'	fox (alt. plural in a-).
eboe	'	trace.
ebuk	'	gong.
ebume	'	pile.
ečak	'	hair at the end of tail.
efe	'	sloth.
efun	'	foreign place.
egae	'	trial, beach.
egak	'	cactus.
ego	'	forked-stick.
egba	'	box (on ear) fist.
egbaŋe	'	strength, power.
egbe	'	menstruation.
egboge	'	creeping.
ejak	'	pride, pomposity.
ejɨm	'	kind of tongs.
ejigi	'	pond, stagnant water.
ekara	'	iron implement held by priest.
ekiŋi	'	stammerer: small wasp.
ekube	'	conversation.
ekume	'	function, office.
eme	'	neck.
enae	'	rainy season.
enare	'	kind of spider.
enok	'	fight.
enuŋ	'	bed.
eyu	'	yam.
eriŋ	'	sign.
esore	'	clay plate.
esup	'	court.
ewaŋ	'	implement for plucking cocoa.
eyak	'	rubber.

Tone class ˋˊ or ˋˊˊ		
eban	'	iron rod.
ebat	'	pancreas.
ebuya	'	white edible substance.
ečigi	'	sill.
ečome	'	appetizer with food.
ečobe	'	eraser.
ečo	'	something pounded.
efu	'	cut, wound.
efɨme	'	wicked spirit, witchery.
efoŋe	'	similarity.
efini	'	that which locks.
egbu	'	kind of food from corn.
egbuŋe	'	momentary closure of eyes.
ejiŋ	'	pile, heap (alt. plural in n-).
ekae	'	crab.
ekɨt	'	widowhood.
ekii	'	madness.
ekum	'	kite.
ekpe	'	brush.
ekpuŋ	'	calabash with neck.
erɨm	'	bitter yam.
esare	'	latrine (place).
eti	'	advice.
epi	'	cow's horn (drinking vessel).

DIALECT OF BENDEGHE AYUK, or /Bindege/, in Ogoja Province, Eastern Region, Nigeria.

INFORMANT: MOSES ÁBÁNG É!TÁ

e- to bi- con't.

Tone class
ˋ ˆ or ˋ ˊ ˋ

ebe	'	escape.
ebɨk	'	path; something partly filled.
ebɨn	'	dance.
ebop	'	parcel.
ečiri	'	sneeze.
efune	'	red fly.
efüfam	'	kind of tree.
efɨŋ	'	stomach.
efap	'	floor, brooklet.
efɨp	'	polygyny.
egbuk	'	ravine.
ejimi	'	custom.
ejo	'	little brush.
ekon	'	song.
ekop	'	ladle.
ekü	'	cry, death.
erɨbe	'	tongue.
eru	'	manner, behavior.
esikoŋ	'	mud or wooden pipe.
eyat	'	chin.
eyem	'	wound.
eyük	'	wooden drum.

Tone class
ˊ ˊ or ˊ ˊ ˊ

	ebore	'	yellow scum.
	ečome	'	insanity.
	edida	'	round basket.
	ego	'	hawk.
	egbaŋ	'	bell.
A*	egbogbok	'	something old.
A	egbügi	'	someone moving sluggishly.
A	ejojop	'	stupid person.
A	ejume	'	low brea fellow.
	ejügi	'	vapor, steam.
	ekɨt	'	kind of soft coco yam.

Tone class
ˋ ˇ or ˋ ˋ ˊ

ebaŋe	'	squirrel.
ebɨge	'	flying squirrel.
ebɨt	'	ceremony after death.
eboge	'	second occasion.
ebuŋe	'	stack of yams.
efup	'	fear.
efɨŋe	'	key.
efɨge	'	fan (alt. plural in n-).
efiri	'	screw.
egome	'	plantain.
egan	'	story, parable.
ejɨp	'	lake.
ejo	'	civet cat.
ekebe	'	small sickle.
ekɨme	'	small basket.
ekun	'	adultery.
emaŋe	'	sickness.
emege	'	ankle, wrist.
etan	'	ant-hill.
etün	'	hair left after barbering.
eyom	'	hoe.
eyu	'	ray.
eyum	'	voice.

Tone class
ˊ ˋ or ˊ ˋ ˋ

egom	'	jaundice.
egak	'	kind of game.

Tone class
or ˊ ˊ ˋ

ebip	'	guinea pig.
ekpiri	'	small wooden drum.
erop	'	spear.
esebe	'	sand.
esikok	'	hiccough.

---

* A's indicate that I think they are the Etung way of handling Adjectives; they need a following noun to make sense, but they act like nouns themselves in that they perturb the following noun according to normal N + N rules.

e- to bi- con't.

Tone class

´ˇ or ´`´

edimba	'	narrow necked pot.
egɨnɨm	'	something or (someone) bent over.

Other tone patterns.

	^´`	ebare	'	smoothing instrument (alt. plural in a-).
	`ˇ	eče	'	pepper pestle.
A?	´`^	ebɨme	'	greyness.
	``ˇ	efomnte	'	puff adder.
	´^`	ejagba	'	big needle for sewing sacks.
A?	´^`	ejiji	'	stupid person.
A?	´´```	ejogejoge	'	rude person.
A?	´´´´´	ejuŋejuŋe	'	that which is high and unsteady.
	``	ekɨmamgba	'	intimacy.
A?	´´´´	ejuŋguruŋ	'	that which is tall.
	``ˇ	ekogarɨm	'	rainy morning.
	´´´´	ekumorok	'	kind of fish.
	^^	ekü	'	owl.
	`´`´`	ebigibigi	'	shout for gladness.
	´^`	eresi	'	rice.
	´`^	eruŋa	'	water-yam.

---

e- to a- (85 items)

ˋˋ or ˋˋˋ

	ebi	'	fox (alt. pl. in bi-).
	edü	'	maggot.
	efabe	'	wing.
	efu	'	marble.
	egɨre	'	ring, girdle.
	egut	'	parrot (alt. pl. in bi).
	egbaŋgbaŋ	'	big vessel. zinc.
	ejik	'	kind of maggot.
	ejoŋe	'	thorn.
	ejü	'	native pear.
	ekek	'	molar, black tooth.
	eŋare	'	finger-nail.
A?	etɨm	'	old thing.
	eyıŋi	'	root.

ˋˊ or ˋˊˊ

A?	ebage	'	something divided, e.g. yam.
A?	ebare	'	something growing wild.
	ebi	'	pot: placenta.
	ekae	'	basket.
	ekat	'	leg, foot.
	ekɨm	'	stump of tree.
A?	ekpage	'	empty thing.
	ekpage	'	skin (of tree).
	ewaŋe	'	reed.

ˋˆ or ˋˊˆ

	'	ebe	'	breast.
	'	ebun	'	heap (alt. pl. in N-).
A?	'	ečak	'	something torn.
	'	efaŋ	'	shoulder.
	'	ekim	'	half, part which is short. (alt. plural in n-).
	'	eko	'	stem (of leaf).
	'	ekup	'	tick.
	'	ekük	'	cooking-stone.
	'	emaŋ	'	palm-leaf.
	'	enyin	'	dot.
	'	eŋan	'	bat.
	'	erok	'	sore.
	'	esikoŋ	'	wooden or mud pipe.
	'	eyem	'	wound (alt. plural in bi-).
	'	eyiŋ	'	tooth (plural amɨŋ).
	'	eyit	'	eye (plural amɨt).
	'	eyoŋ	'	drop (e.g. of water) eczema.

ˋˇ or ˋˋˊ

'	ebat	'	side, part.
'	ebɨp	'	weal.
'	efut	'	feather (alt. pl. in m-).
'	egbem	'	hollow place (not filled up).
'	ejare	'	foot-print, foot step.
'	eji	'	egg.
'	emap	'	dint, dent.
'	emage	'	ankle, wrist (alt. pl. in bi-).
'	enyot	'	hair.

e- to a- con't.

´´ or ´´´		
	ebaŋe	hollow rock.
A?	ebare	white thing.
	ebere	clay pot.
A?	ebi	red thing.
	ebiri	hole, pit.
	ečiŋi	broken crockery.
	efare	shoulder blade.
A?	efebe	that which is light.
	efoŋe	empty space.
	efu	branch of plant with leaves.
	efi	boil.
A?	egbogbok	something old e.g. machine, (alt. pl. in bi-).
A?	egbügi	someone moving sluggishly as a leper with no toes (alt. pl. in bi-).
	ejak	a laughing bird with long beak.
	ekap	mark made by ringworm.
	ekɨp	bone.
A?	ekimi	that which is cut.
	ekpak	grasshopper.
	ečigi	crooked (alt. pl. in b).
	esün	smelling insect, family of ant.
	etambuŋ	mat (for drying beans).
	eti	wood, tree.
	eyege	palm-rod.

´ˋ or ´ˋˋ		
A?	efoge	that which prevents.

´ˆ or ´´ˋ	
enyiŋ	guinea fowl.

´ˇ or ´ˋ´	
egbo	kind of pin used in decorating gourds and calabashes.

Others.

A?	ˆ´ˋ	ebege	something broken in pieces.
	ˆˋ´	efae	wooden spatula (for fufu).
	´ˋˆ	efue	yellow fly (not harmful).
	´ˋˆ	egbeme	hollow place (not filled up) term of an abuse.
	´ˆˋ	ejagba	big needle for sewing sacks (alt. pl. in bi-).
A?	ˆ´ˋ	ejoge	that which is broken into pieces.
A?	´ˋˆ	enyage	black thing.
	´ˋˆ	etügi	piece of burning wood.

N(i)- (32 items) 'mass' nouns

ˋˋ or ˋˋˋ

nčɨbe	'	hopping.
ndɨm	'	beans game.
nduge	'	beni-seed.
mfan	'	number.
mfem	'	flower.
ngom	'	fine.
mgbeyuk	'	severe fever.
nkoge	'	a tree fallen across road.
nnyore	'	shea-nut.
nnük	'	porridge water.
nnyage	'	black juice leaf.

ˋˇ or ˋˋˊ

mbume	'	rafters.
ngun	'	world.
nnyüŋ	'	vegetables.
nsi	'	mud.

ˊˊ or ˊˊˊ

mbim	'	fruit with black paint.

Others

ˊˋˆ	mfiri	'	ground-nut.

ˋˊ or ˋˊˊ

nčiri	'	gunpowder.
mfa	'	green leaves.
mfune	'	shredded leaves.
njue	'	sun.
mkpaŋe	'	cover for water pot.
ntaŋ	'	refusal, objection.
nnyube	'	sweat.

ˋˆ or ˋˊˋ

mbot	'	pulp of fruit.
mbuta	'	rain.
nčen	'	noon.
mfam	'	kind of juju.
mfep	'	wind.
mfüi	'	scum.
ngum	'	places.
nnü	'	hair.
nson	'	shame, shyness.

$N^{(i)}$-to $N^{(i)}$-

(8 items)

\`\` or \`\`\`

nkoge	'	tree fallen cross road.
nnyore	'	shea-nut.
ntɨp	'	sticks used for mud houses.

\`^ or \`´^

nkap	'	kind of weaving.
nkat	'	kind of fruit (edible).
nkikɨt	'	small mortar.

´´ or ´´´

nsa	'	draughts.

Others

mbanamba´\`^\`	'	swallow (bird).

N$^{(i)}$- to o- (66 items)

ˋˋ or ˋˋˋ

mbae	two spotted palm civet.
mbiŋ	name.
ngon	horn-bill.
ngu	skin.
njɨm	back.
njok	elephant.
nkaŋe	bamboo, rib.
nkon	bee.
nnyagakokon	big millipede.
nnyam	meat, animal.
nsum	drill.
nwet	book, school.
nyɨp	alligator.

ˋˊ or ˋˊˊ

mba	road (could also have a concord).
mfuŋ	buffalo.
njiŋ	fly.
nke	white ant.
nkem	mamba, (snake).
nkɨm	python.
nko	large snail.
nkoŋɨm	bush cow.
nku	rufous-bellied rat.
mkpo	shoe.
nsɨm	genet.
nsi	fish.
ntüt	female private part.
ntam	trap.

ˋˆ or ˋˊˋ

mbue	goat.
njo	dog.
nju	house.
nka	load-pad.
nkim	circumcision.
nkündak	peacock.
mmɨk	glass, tumbler.
nnyo	snake.
nnyop	porcupine.

ˋˇ or ˋˋˊ

mbaŋ	kernel.
mbi	red-feather bird.
mbüi	louse.
ndae	hernia (pl. orae).
ndem	dream (pl. orem).
ngume	bush-pig.
ngaŋ	chest.
njae	hunger.
nkok	fowl.
nkam	drum, (tied with skin).
nkop	box.
ntɨbe	okro.
ntɨne	penis.
ntuŋ	throat.
nyok	chimpanzee.
nsun	red-deer.

N$^{(i)}$- to O- con't

´´ or ´´´ '

mbɨm	' mosquito.	'
mbɨŋe	' heart.	'
mbot	' sandfly.	'
nče	' small snail.	'
nčit	' garden-egg.	'
ndoŋ	' jigger (pl. oroŋ).	'
mfem	' cockroach.	'
ntüŋ	' navel.	'

´^ or ´´`

ngare	' pepper.

Others

mbiantuŋ`´`ˇ	' spitting cobra.	'
mfiri ´`^	' ground-nut.	'
nkupeyit```^	' eyebrow.	

N(i)- to a- (22 items)

ˋˋ or ˋˋˋ

njom	'	juju, sacrifice.
nkap	'	fruit.
mkpoe	'	corner.
mkpütü	'	sludge (waste water from palm-nuts).
nsom	'	paddle, oar.
nsure	'	blister.
nčok	'	kind of grass.

ˋˊ or ˋˊˊ

mkpaŋe	'	cover for water pot.
ntae	'	stone.
ntare	'	main beam.
ntɨme	'	pole (used in boat).

ˋˆ or ˋˆˋ

ndap	'	branch.
mfut	'	yellow fly.
mkpun	'	club, baton.
nsan	'	thunder.
nsum	'	finger (of plantain).
ntɨm	'	end, time.

ˋˇ or ˋˋˊ

mbue	'	cover, lid.
nčot	'	trouble.
nsure	'	ripe plantain.

ˊˊ or ˊˊˊ

nje	'	leaf.

Others

ˋˆˋˊ	ndumoto	'	kind of gourds (pl. arumoto).

bi- (23 items) 'mass' nouns

ˋˋ or ˋˋˋ		
bičaŋ	'	visit.
biji	'	body.
bikaŋ	'	wild nut with strong smell.
birɨmtim	'	violent.
bisiŋ	'	wrestling.
bitop	'	muddy lane.

ˋˊ or ˋˊˊ		
bibi	'	small pot.
bifame	'	scolding.
bimo	'	filthiness.
biruk	'	wickedness.
bisek	'	joke.
bisere	'	after dinner drink.
bita	'	war.

ˋˆ or ˋˊˋ		
bičoe	'	bad luck.
bikep	'	spy.
binot	'	evening visit.
bisuge	'	kind of fruit with sticky juice (edible).

ˋˇ or ˋˋˊ		
bifigi	'	musical instrument.
biko	'	plant with strong odor (edible).
bimeŋe	'	senses, cunning.
bisu	'	alligator-pepper.

ˊˇ or ˊˋˊ		
bidɨme	'	small mortar.
bilam	'	sluggishness.

bi- to N^a- (35 items)

`` or ```

bisoŋ	'	hip.
bisu	'	dove.
bitɨme	'	knife, machete.

`´ or `´´

bibore	'	kind of bird.
bifam	'	wedge (for breaking wood).
bifɨge	'	vampire-bat.
bikae	'	pangolin.
bikoe	'	curve.
biru	'	defective pupil of the eye.
bise	'	plate, basin.
bisoŋe	'	spoon, fork.
bitɨn	'	calabash.
bikpae	'	brown bird with yellow feet.
bine	'	image.
binon	'	bird.

`^ or `´`

biki	'	tail.
bikü	'	water beef.
bise	'	duiker.
biya	'	calabash with handle.

`ˇ or ``´

biteŋ	'	plait.
biton	'	hair on woman's pelvis .

´´ or ´´´

bičage	'	toe-sore.
bičome	'	calf of leg.
bifage	'	piece of wood with fire.
bifure	'	cane rope.
bifiŋ	'	space between toes and finger.
bikebe	'	rod for fishing.
bikon	'	wasp, or mason fly.
bikpa	'	whip.
bisuge	'	weaver bird.
bisaŋ	'	frog with long legs which jumps very far.

´^ or ´´`

bičit	'	sunbird.
bifet	'	mongoose.

Others

`´```	bikonakom	'	a singing bird.
´´¯	bikumnsi	'	Otter shrew.

bi- to a- (4 items)

ˋˋ or ˋˋˋ

bisaŋ	' Sticks fɔr propping yams.

ˋˊ or ˋˊˊ

bitare	' A tree with small leaves.

ˋˇ or ˋˋˊ

bibaŋ	' horn.
bijɨp	' vein.

$N^{(o)}$- to a- (20 items)

ˋˋ or ˋˋˋ

nguŋe	' young-man. '
njan	' lazy person. '
nne	' person. '
nsop	' girl, lady. '
ntem	' friend. '
nčok	' fool. '

ˋˊ or ˋˊˊ

nčii	' dumb person. '
njene	' stranger. '
njop	' fool. '
nkae	' wife. '
mkpak	' poor person. '
nsüŋ	' slave. '

ˋˆ or ˋˊˋ

ndum	' husband. '
mfɨp	' co-wife. '
nje	' witch. '

ˋˇ or ˋˋˊ

mfone	' owner. '
mgban	' powerful man. '
nnyen	' mother. '

ˊˊ or ˊˊˊ

mgban	' servant. '
nse	' father. '

O- (no plural)

ˋˋ or ˋˋˋ

oboma	'	plant with paint.
ofi	'	pawning.
ojo	'	narrow base water pot.
oka	'	skill. .
ono	'	good, good thing.
otasi	'	creeping plant with bitter leaves.
otem	'	friend-ship.

ˋˊ or ˋˊˊ

obi	'	evil.
obone	'	sleepy'dust'in eyes.
oču	'	bitter leaf.
ofu	'	day.
oke	'	marriage.
osam	'	diarrhoea.
osi	'	chicken-pox, measles, fish.

ˋˆ or ˋˊˋ

obɨbe	'	tear (from the eyes).
obim	'	group hunters.
ofi	'	selfishness.
otue	'	chieftaincy.

ˋˇ or ˋˋˊ

obɨp	'	mushroom.
ogɨm	'	backbiting.

ˊˊ or ˊˊˊ

omaŋ	'	fruit used in killing fish, treating measles.
otae	'	kind of game.

ˊˋ or ˊˋˋ

odük	'	kind of snuff.

Others

oso ˊˊ ¯ ' sky.

o- to $N^{(i)}$- (3 items)

ˋˊ or ˋˊˊ

okun	'	fire-wood.
osiŋ	'	mango tree.

Others.

ˆˋ oki	'	tailor ant.

o- to a- (44 items)

ˋˋ or ˋˋˋ

obukpoŋ	'	trumpet.
ofun	'	leprosy.
ogɨm	'	market, week.
ogbe	'	special dance.
ojü	'	native pear tree.
okoro	'	down-wine.
okpere	'	gourd used as plate.
okpuga	'	six pence, (pl.- a- which is money).
omone	'	monitor, (kind of lizard).
oraga	'	bridge.
oreŋ	'	sponge.
otere	'	vulture.
otun	'	funnel.
otü	'	jar.
oya	'	stomach, pregnancy.
oyɨm	'	grave.
oyük	'	arrow.

ˋˊ or ˋˊˊ

okɨm	'	cotton tree.
orikaŋ	'	matches.

ˋˆ or ˋˊˋ

obi	'	palm-tree.
obo	'	arm.
oči	'	face.
ofak	'	broom.
ogbap	'	armpit.
ogbu	'	shelf.
okak	'	special type of wood.

ˋˇ or ˋˋˊ

okpi	'	boat, canoe.
osep	'	soup.
osim	'	web, (spider's).

ˊˊˊ or ˊˊ

okut	'	wooden barrel.
okpa	'	first born.
osere	'	down, under.
osogo	'	stack (of yams).

ˊˋ or ˊˋˋ

oda	'	drying platform.

ˊˆ or ˊˊˋ

ogbiri	'	chair.

Others.

ˊˋˆ okuŋa	'	chameleon.
ˇˊˇ okpiton	'	umbrella.

ˋˆ or ˋˊˋ

okik	'	cheek.
okoe	'	cough.
okpoŋe	'	quarrel.
oŋa	'	cat.
orɛŋ	'	fufu.
ota	'	thigh.
otuŋ	'	ear.

Ni$^{(a)}$- to o- (3 items)

ˋˋ or ˋˋˋ

nño	'	mouth.

ˋˆ or ˋˊˋ

mbuk	'	forehead.
mmi	'	nose.

N(a)- to a- (9 items)

ˋˋ or ˋˋˋ

ndini	'	boundary.	'

ˋˊ or ˋˊˊ

mbum	'	new palm-leaf.	'
ndɨm	'	fairy.	'
ndigi	'	rope.	'
mfuk	'	hole.	'

ˋˆ or ˋˊˋ

nčok	'	pestle.	'
mfen	'	shaft.	'
ngun	'	gun, fire.	'
njan	'	medicine.	'

ˋˇ or ˋˋˊ

a- 'mass' nouns (62 items)

ˋˋ or ˋˋˋ

ajobe	'	miscellaneous things.
abakpa	'	Hausa people.
abɨn	'	pus.
abürü	'	dirt in the water.
ačam	'	inferior cloth.
ače	'	game, playing.
agore	'	apology.
agura	'	ring of iron on the legs of circumcised woman.
agara	'	mucus stuck in the throat.
agbaŋe	'	side pain, lungs.
ajiŋ	'	lever.
akpaŋ	'	hero, brave person.
akpara	'	prostitute.

ˋˊ or ˋˊˊ

abü	'	dew.
adun	'	kind of corn.
afuŋ	'	juju horn.
agba	'	verandah.
akaba	'	potash.
akpanyaŋ	'	small pox.
akpe	'	palm-tree.
arɨm	'	debt.
atim	'	lungs.
awowo	'	little bells.
ayuŋ	'	blood.

ˋˇ or ˋˋˊ

aam	'	palm-wine.
adagat	'	kind of yam.
agun	'	rust.
ajiri	'	round beans.
aron	'	brain.
asabe	'	itching leaf with dangerous hairy fruit.
ayü	'	willful accusation.

ˋ^ or ˋˊˋ

abɨŋ	'	excrement.
ačik	'	carbon, (from cooking place).
afɨge	'	urine.
afom	'	fat.
akaŋ	'	salt.
ɛkɨn	'	bahama grass.
asan	'	syphilis.
atoŋ	'	ash.
awaŋ	'	smell from fresh fish.

ˋˋ or ˋˋˋ Con't.

akpabe	'	threat.
ami	'	mucus.
anɨbe	'	partiality.
anik	'	epilepsy.
anwam	'	seizure.
apa	'	the least piece of money.
ariri	'	temporary decorated pillar.
asigi	'	tickling.
ason	'	saliva.
asuge	'	inciting to anger.
ataŋ	'	Indian bamboo.
atem	'	beads.
atigi	'	doing something without consultation.
atop	'	swamp, muddy ground.
ayebe	'	imitation.
ayigi	'	removal.

Others

abii	ˊˋ^	'	race.
ače	^^	'	cutting sticks.
ačeme	ˋˋ^	'	one who tramps heavily.
ačɨbe	ˋˋ^	'	twister.
afere	^ˊˋ	'	dust of roasted yam.
anabe	ˋˋ^	'	repairer.

a- to a- (14 items)

ˋˋ or ˋˋˋ

aga ' needle.
akačak ' rattle.
atɨma ' old farm ground.
atore ' mahogany.
atü ' night.
aya ' river.
ayip ' water.

ˋˊ or ˋˊˊ

adüdü ' long haired goat.
afat ' set of twins.
akpakak ' chair.

ˋˆ or ˋˊˋ

afek ' hair at the temples.
afifoŋ ' handkerchief.

ˊˊ or ˊˊˊ

agira ' wooden instrument.
agbara ' soft red wire.

ba- 'mass' or 'abstract' nouns (6 items)

ˋˋ or ˋˋˋ

Banaŋ ' deceit.
Batɨm ' beating.

ˋˊ or ˋˊˊ

Bafaŋ ' untruthfulness.

ˊˊ or ˊˊˊ

Bakpü ' wickedness.

Appendix VII

PRELIMINARY DESCRIPTION OF SOME VERB STRUCTURES IN ETUNG[1]

Tom Edmondson

Introduction

The focus of this paper is upon some segmental and tonal structures of verbs in Etung[2], a Cross-River Bantu language of Southeastern Nigeria.

The verb structures handled here are those found in the predicates of independent and dependent clauses (i.e. not subordinate clauses) with the exception of (independent) imperative clauses. These clauses are so decribed because of their distribution in the sentence.

Verb structures are discussed here under two heads: basic forms (section 1.) and amplifications of basic forms (section 2.). On the basis of structural differences two sub-groups of basic forms are set up: (a) indicative-prefixed forms (section 1.1) and (b) minimal and suffixed forms (section 1.2).

Features relevant to each section, though not necessarily treated in this order are: (i). Principal classes of verb stems; (ii). the segmental and CV structures of basic forms of verb structures and their amplifications; (iii). The relations of these structures to corresponding tonal structures, and (iv). the varying nature of these tonal structures in terms of predictability and unpredictability.

1. Basic Forms of Verb Structures.

1.1. Indicative-prefixed Forms.

1.1.1. The structure of any indicative-prefixed form consists of an obligatory pronominal prefix, followed by an obligatory indicative prefix, followed by an obligatory verb stem. Two classes of verb stems are set up on the basis of tonal differences and since these differences most clearly appear in indicative-prefixed forms, it is more appropriate to begin with these forms than with the minamal forms (see section 1.2). The two classes of verb stems are designated A and B respectively, and some of their tonal differences are set out in Table II. But first, the segmental and CV structures of the indicative-prefixed forms are shown in Table I.

TABLE I. Segmental and CV Structures of Indicative-Prefixed Forms.

	Pronominal Prefix	Indicative Prefix	Verb Stem of Class A or B
CV Structures	C V CV	CV	CV CVC CVV CVCV

1.1.2. Given the indicative-prefix, the tonal structure of the indicative-prefixed form is predictable and can be stated as follows:-

The following tone patterns were earlier found:-

Tone Patterns	3 Syllable	2 Syllable	1 Syllable
1	LLL	LL	L
2a	LHH	LH	$\overset{\frown}{\text{LH}}$
2b		$^{!}$HH	$^{!}$H
3	HLL	HL	$\overset{\frown}{\text{HL}}$
4	HHH	HH	H
5	LHL	L$\overset{\frown}{\text{HL}}$	–
6	LLH	L$\overset{\frown}{\text{LH}}$	–
7	HHL	H$\overset{\frown}{\text{HL}}$	–
8	H$^{!}$HH	H$^{!}$H	$\overset{\frown}{\text{H}^{!}\text{H}}$
9	HLH	H$\overset{\frown}{\text{LH}}$	–
10	LH$^{!}$H	L$\overset{\frown}{\text{H}^{!}\text{H}}$	–
11	HH$^{!}$H	H$\overset{\frown}{\text{H}^{!}\text{H}}$	–

Another tone pattern, H$^{!}$, could now be added.

The tone patterns[3] of the verb stem are determined by:-

a. the tone pattern of the indicative-prefix, and

b. the class to which the verb stem belongs, whether A or B.

The tone pattern of the pronominal prefix is determined by the tone pattern of the indicative prefix in all persons except 3rd person plural where the tone pattern is invariably High. In Table II, which illustrates these patterns of co-occurrence, it is to be noted therefore that the tone patterns of the pronominal prefixes in the left-hand column represent all persons except 3rd person plural.

TABLE II. The Relations of Segmental Structures to Tonal Structures in Indicative-Prefixed Forms

Tone Patterns of Pronominal Prefixes	Tone Patterns of Indicative Prefixes	Tone Patterns of Verb Stems of Class A	Tone Patterns of Verb stems of Class B
L	H (kí mó ká)	LH	!HH
H	!H (!mó)	LH	!HH
H	L (kà)	H!H	HH
L	HL (kâ)	HL	HL

The meanings of the Indicative prefixes are as follows:-

kí 'present continuative'

!mó ~ mó 'future negative'

mó occurs with 3rd person pl; !mó elsewhere

kà ~ ká 'simple past negative'

ká occurs with 3rd per. pl; kà elsewhere

rò ~ dò 'future negative repetitive'

dò occurs with first per. sg; rò elsewhere

kâ 'negative optative' [or negative of obligation]

The pronominal prefix segements are as follows:-

I	sg.	N-
II	sg.	o-
III	sg.	a-
I	pl.	e-
II	pl.	o-
III	pl.	a-

Third person singular and plural indicative-prefixed forms are nearly always distinguished by tonal differences over the pronominal prefix segment or over the indicative prefix segment where the latter requires a special tone in the 3rd person plural.

Second person singular and plural indicative-prefixed forms are distinguished by the plural verb suffix -wûn ~ -ûn. The first of these allomorphs occurs following a vowel, the second following a consonant.

1.1.3. Examples for

TABLE II: Class A Verbs; 3rd pers. sg.

(1)	à-kí-gùré	'he-is-selling'
(2)	á-ꜝmó-gùré	'he-won't-sell'
(3)	á-kà-gúꜝré	'he-did not-sell'
(4)	á-rò-gúꜝré	'he-will not again-sell'
(5)	à-kâ-gúrè	'he-should not-sell'

Supplementary Examples:-

à-kí-sú	'he-is-washing'
á-kà-súꜝ	'he-did not-wash'
à-kâ-sû	'he-should not-wash'

Examples for

TABLE II: Class B Verbs.

(6)	à-kí-ꜝbómé	'he-is-putting on'
(7)	á-ꜝmó-ꜝbómé	'he-won't-put on'
(8)	á-kà-bómé	'he-has not-put on'
(9)	á-rò-bómé	'he-will not again-put on'
(10)	à-kâ-bómè	'he-should not-put on'

Supplementary Examples:-

à-kí-ꜝká	'he-is-staying'
á-kà-ká	'he-did not-stay'
à-kâ-kâ	'he-should not-stay'

The 3rd person singular forms cited above represent tones of all other persons except 3rd person plural. Under section 1.1.2. above, it was observed that 3rd person singular and plural are distinguished nearly always by tone, either over the pronominal prefix segment (compare examples 1 and 5 above with examples 11 and 15 respectively below: similarly, compare examples 6 and 10 above with examples 16 and 20 below.) or over the indicative prefix segment (compare examples 2 and 3 above with examples 12 and 13 below: similarly, examples 7 and 8 above with examples 17 and 18 below.). Examples 4, 9, 14 and 19 show the exception to the general tonal differentiation of 3rd person singular and plural. It will be noticed that while in 3rd person plural forms, the relations of pronominal prefix and indicative prefix tone patterns do not generally correspond to Table II, then relations between the indicative prefix tone patterns and verb stem tone patterns are perfectly regular.

TABLE II: Class A Verbs. 3rd pers. pl.

(11)	á-kí-gùré	'they-are-selling'
(12)	á-mó-gùré	'they-won't-sell'
(13)	á-ká-gùré	'they-have not-sold'
(14)	á-rò-gúꜜré	'they-will not again-sell'
(15)	á-kà-gúrè	'they-should not-sell'

TABLE II: Class B Verbs.

(16)	á-kí-ꜜbómé	'they-are-putting on'
(17)	á-mó-ꜜbómé	'they-won't-put on'
(18)	á-ká-ꜜbómé	'they-have not-put on'
(19)	á-rò-bómé	'they-will not again-put on'
(20)	à-kà-bómè	'they-should not-put on'

1.2. Minimal and Suffixed Forms.

1.2.1 The minimal form of the verb consists of an obligatory pronominal prefix and an obligatory verb stem. This form may be suffixed, in the case of verbs having CV stems, by a consonant or vowel suffix, and in the cases of verbs having CVC, CVV or CVCV stems, by a vowel suffix only. Di-syllabic verb stems exhibit mono-syllabic stem allomorphs before suffixation. CVV verb stems have the stem allomorph CV and CVCV verb stems have the stem allomorph CVC, e.g.

à-yúe 'he killed'

(verb stems, their allomorphs and their meanings are underlined), á-yù-á 'he-kills-habitually'; à-bómè 'he-put on', á-bòm-á 'he-puts on-habitually'.

1.2.2. In the phonological analysis of Etung, pitch has been treated at the level of the phonological word in terms of tone patterns, so that each phonological word is marked by a tone pattern. The phonological word is not, however, necessarily congruent with the grammatical word and in fact the constituent parts of the verb are themselves regarded as phonological words. For example, the pronominal prefix is regarded phonologically as a word and therefore carries a tone pattern. The same is true of other verb prefixes and of the verb stem.

Upon the same principle the *suffix* too is a phonological word except when it is not a vowel.

The suffixed verb stem might then be treated as a complex unit bearing *two* tone patterns, i.e., the tone pattern of the verb stem plus the tone pattern of the suffix. But it facilitates description to regard the verb plus suffix as a complex unit, both phonologically and grammatically. As a complex phonological word comprising two such words, it is regarded as being marked by *one* tone pattern. As a grammatically complex unit, here termed a *verb core*, its tonal structure generally is predictable, being determined by the tone pattern of the suffix morpheme and the class to which the verb stem belongs. Table III illustrates the predictability of tone patterns over verb cores.

TABLE III. The determination of tone patterns over Verb Cores.

Tone patterns of suffix morphemes	Resultant Tone Patterns Over Verb Cores shown at Interstices	
	Class A Verbs	Class B Verbs.
H	L H	H H
!H	H!H	H!H
H!H	L H!H	-

The core whose tone pattern is LH!H is confined to Class A verbs. Some exceptions to these rules are stated below under Suffix Morphemes.

Suffix-Morphemes.

These suffix morphemes and the tenses they indicate are now listed together with the tense[4] abbreviations employed in Table IV below.

-á Past habitual (PH) [also -k for certain verbs with CV stems]

-á -!á Present habitual (PrH) [also -k for certain verbs with CV stems.]

-!á occurs with third person plural

-á occurs elsewhere

(in class B verbs, the suffix -á produces tone pattern LH over the verb core, an exception to the rules above.)

-!x́ ∿ -x´!´∿ -ń´ Pluperfect (PP)

-n´'´ occurs with all persons except 3rd person plural of class A verbs.

-'ń occurs elsewhere

-x́ Pluperfect variant (PPv)

The symbol x represents:-

(i) reduplication of high front vowels where these occur in the verb stem,

(ii) the vowel -e elsewhere.

(in the third person plural of class A verbs the suffix -ń produces the tone pattern HH over the verb core, an exception to the rule above)

1.2.3. But while some degree of predictability exists in the formation of the tonal structure of the verb core, the co-occurrences of pronominal prefix tone patterns with the verb stem and verb core tone patterns, has not been found to be predictable. ["Table IV suggests that these relations are arbitrary"] For example, in the first person singular of the Past Habitual tense (PH), the tone pattern of the verb core derived from a Class A verb stem is LH; so too is the tone pattern of the verb core in the first person singular of the Present Habitual tense (PrH); yet in the first case, the tone pattern of the pronominal prefix is L while in the second case the tone pattern of the pronominal prefix is H. But in the third person plural of the Past Habitual tense (PH), while the tone pattern over the verb core is still LH, the tone pattern of the pronominal prefix is now HL. Equally, difficulties of this kind arise with verbs with Class B stems. In the first person singular of the Past Habitual (PH), the tone pattern of the verb core is HH; so too is the tone pattern of the verb stem in the first person singular of the optative (OP). Yet in the first case the tone pattern of the pronominal is L, while in the second case the tone pattern of the pronominal prefix is H. However in the third person plural of the Past Habitual tense, while the tone pattern over the verb core is still HH, the tone pattern of the pronominal prefix is now HL.

1.2.4. In Table IV irregularities in the over-all pattern of verb stem and verb core tone patterns are marked in two ways. First, dotted rings indicate interstices where the expected tone patterns do not appear. For example, in vectors IP, the dotted ring shows that in the third person singular of the immediate past/future tense (with both class A and class B verb stems), the expected tone pattern LL does not occur over the verb stem segment. Similarly, in vectors Ø (with both classes of verb stems) it might be expected that third person plural would exhibit tone pattern HL over the verb stem following tone pattern L over the pronominal prefix. But this is not the case and the dotted rings show this. Second, complete rings at interstices indicate either, (i) that the expected tone pattern over the verb stem or core occurs in an unexpected position, e.g., verb stem tone pattern in third person plural of vector Ø (both classes of verbs), or (ii) that an unexpected tone pattern appears in an unexpected position, e.g., in vector OP (class A verb stems) the verb stem tone pattern in third person singular is LH following pronominal prefix tone pattern L. Similarly in vector PPv (class A verb stems) the verb stem tone pattern in third person plural is HH following pronominal prefix tone pattern H.

It will be observed that all these irregularities only affect third persons singular and plural which are thus always distinguished tonally. There are three types of distinctions:

(i) distinctions dependent upon dissimilar tone patterns over both pronominal segments and verb stems or cores (see Table IV: Class A verbs, vectors IP, OP, PPv, and PP; Class B verbs, vector IP);

(ii) distinctions dependent upon dissimilar tone patterns of the pronominal prefixes only, while tone patterns over verb stems and verb cores remain identical (see Table IV: Class A verb stems, vectors PH and Ø; Class Bverb stems, vectors OP, PH, PPv, Ø and PP), and

(iii) distinctions dependent upon dissimilar tone patterns over the verb cores only (see Table IV: Class A verbs, vector PrH; Class B verbs, vector PrH). These differences of differentiation between third persons singular and plural are supporting criteria for distinguishing between the two classes of verb stems.

It has been noted above under 1.1.2. that second persons singular and plural are distinguished by the plural verb-suffix -wûn ∿ -ûn. This suffix is secondary in position to the tense suffixes when they occur.

TABLE IV:-

FORMATION OF MINIMAL AND SUFFIXED FORMS OF THE ETUNG VERB

Pronominal Prefixes			Tone Patterns of Verb Stems and Cores Indicated at Intersects													
Persons	Segments	Tone patterns	T E N S E S: Class A Verb stems							T E N S E S: Class B Verb Stems						
			IP	*OP*	PH	PPv	PrH	Ø	PP	*IP*	*OP*	PH	PPv	PrH	Ø	PP
I sg	N-	L	–	–	LH	LH	–	HL	LH'H	–	–	HH	HH	–	HL	H'H
		H	LL	H'H	–	–	LH	–	–	LL	HH	–	–	LH	–	–
IIsg	o-	L	–	–	LH	LH	–	HL	LH!H	–	–	HH	HH	–	HL	H!H
		H	LL	H!H	–	–	LH	–	–	LL	HH	–	–	LH	–	–
I pl	e-	L	–	–	LH	LH	–	HL	LH!H	–	–	HH	HH	–	HL	H!H
		H	LL	H!H	–	–	LH	–	–	LL	HH	–	–	LH	–	–
IIpl	o-	L	–	–	LH	LH	–	HL	LH!H	–	–	HH	HH	–	HL	H!H
		H	LL	H!H	–	–	LH	–	–	LL	HH	–	–	LH	–	–
IIIsg	a-	L	HL	LH	LH	LH	–	HL	LH!H	HL	HH	HH	HH	–	HL	H!H
		H	–	–	–	–	LH	–	–	–	–	–	–	LH	–	–
IIIpl	a-	L	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		H	LL	H!H	–	HH	H!H	HL	H!H	LL	HH	–	HH	H!H	HL	H!H
		HL	–	–	LH	–	–	–	–	–	–	HH	–	–	–	–

Notes:
(1) In vector PP (Class A verbs) the ligature linking H with 'H indicates that these two tones occur over the same syllable.
(2) Tenses constituted by minimal forms [by change of stem tone] are indicated at the heads of relevant columns by abbrevations in italics.

Partial Citation Paradigm

In this partial citation paradigm from Table IV, examples are restricted to first person singular (which is representative of first person plural and second persons singular and plural as far as tonal structure is concerned) and to third persons singular and plural. Citations are made from both classes of verbs, A. and B.

Class A verbs: first person singular.

Reading from left to right across the first row:

PH	ǹ-sǔ-k	'I have been washing'
PPv	ǹ-sù-é	'I had washed'
Ø	ǹ-sû	'I washed'
PP	ǹ-sù-é!´	'I had washed'

Reading from left to right across the second row:

IP	ń-sù	'I have just washed/I am just about to wash'
OP	ń-sú!´	'I should wash'
PrH	ń-sǔ-k	'I wash'

Supplementary Examples:- with two-syllable verb stems

ǹ-gùr-á	'I have been selling'
ǹ-gùr-é	'I had sold'
ǹ-gúr-è	'I sold'
ǹ-gùr- é!´	'I had sold'
ń-gùr-è	'I have just sold'
ń-gú!r-é	'I should sell'
ń-gùr-á	'I sell'

Class A verbs: third person singular:

Reading from left to right across the ninth row:

IP	à-sû	'He has just washed/is just about to wash'
OP	à-sǔ	'He should wash'
PH	à-sǔ-k	'He has been washing'
PPv	à-sù-é	'He had washed'
Ø	à-sû	'He washed'
PP	à-sù-é!´	'He had washed'

Reading from left to right across the tenth row:

PrH	á-sǔ-k	'He washes'

Class A verbs: third person plural:

Reading from left to right across the twelfth row: (It will be noticed that the eleventh row is not occupied)

IP	à-sù	'They have just washed/ are just about to wash'
OP	á-sú'´	'They should wash'
PPv	á-sú-é	'They had washed'
PrH	á-sú!´-k	'They wash'
Ø	á-sù	'They washed'
PP	á-sú-!é	'They had washed'

Reading from left to right across the thirteenth row:

PH	ä-sú-k	'They have been washing'

Class B verbs: first person singular.

Reading from left to right across the first row:

PH	ǹ-ká-k	'I have been staying'
PPv	ǹ-ká-é	'I had stayed'
Ø	ṅ-kâ	'I stayed'
PP	ǹ-ká-!é	'I had stayed'

Reading from left to right across the second row:

IP	ń-kà	'I have just stayed/ am just about to stay'
OP	ń-ka	'I should stay'
PrH	ń-kȧ-k	'I stay'

Supplementary Example:

ḿ-bòm-á	'I put on'

Class B verbs: third person singular

Reading across from left to right the ninth row:

IP	à-kâ	'He has just stayed/ or is just about to stay
OP	à-ká	'He should stay'
PH	à-ká-k	'He has been staying'
PPv	à-ká-é	'He had stayed'
Ø	à-kâ	'He stayed'
PP	à-ká-!é	'He had stayed'

Supplementary Example:

à-bóm-á	'He has been putting on'

Reading from left to right across the tenth row:

PrH	á-kǎ-k	'He stays'

Supplementary Example:

á-bòm-á	'He puts on'

Class B verbs: third person plural.

Reading from left to right across the twelfth row:

IP	á-kà	'They have just stayed/or are just about to stay'
OP	á-ká	'They should stay'

(Class B verbs: third person plural. cont'd)

PPv	á-ká-é	'They had stayed'
PrH	á-ká!´-k	'They stay'
Ø	á-kâ	'They stayed'
PP	á-ká-!é	'They had stayed'

Supplementary Example:

á-bóm-!á	'They put on'

Reading from left to right across the thirteenth row:

PH	â-ká-k	'They have been staying'

Supplementary Example:

à-bóm-á	'They have been putting on'

2. Amplifications of Basic Forms.

2.1. Both indicative-prefixed forms and minimal and suffixed forms may be amplified by optional prefixes. A distinction is made between the repetitive optional prefix, which is at once affected tonally by the tense it amplifies and yet also determines the tone pattern of the verb stem, and initial optional prefixes which have no effect upon the tonal structure of the verb, other than that of adding an extra tone pattern to it.

2.2. The repetitive optional prefix kpo occurs invariably before the verb stem. Verb cores are not found following this prefix and those tenses having verb cores are reduced by de-suffixation following this prefix. Table V displays the range of amplification of basic forms by kpo. It should be noted that all indicative-prefixed forms are included in the extreme right column.

TABLE V. Repetitive Amplifications of Basic Tenses.

	Basic Forms							
	IP	OP	PH	PPv	PrH	Ø	PP	Indic-Prefix
Repetitive Optional Prefix kpo	x	x	-	x	-	x	x	x

Note:- For abbreviations, see Footnote 4.

The behaviour of the repetitive optional prefix is interesting in that (i) its tone patterns are determined as though it were a class B verb stem, and (ii) it has its own characteristic effect upon the tone pattern of the following verb stem. It should also be noted that when following an indicative-prefix, although its tone pattern is determined by the indicative-prefix tone pattern in the same manner as a class B verb stem, yet it is now the optional-prefix, not the indicative-prefix that determines the tone pattern of the verb stem. The relations involved here are stated in Table VI.

TABLE VI. *Verb Stem Tone Pattern: Following Optional-Prefix kpo*.

Tone Pattern of *kpo*	Tone Patterns of Verb Stems	
	Class A Verb Stems	Class B Verb Stems
H	LH	!H
!H	LH	!H
L	LH	H
HL	LH	H

Under 2.1 it was noted that the repetitive optional prefix is tonally affected by the tense whose form it amplifies. In minimal and suffixed forms this means that the tone pattern normally found over a Class B verb stem or verb core *in the tense to be amplified* is now found over the repetitive-optional prefix except in the amplifications of pluperfect variant (PPv) and Pluperfect (PP), where the tone pattern of the optional prefix becomes that of Zero tense (Ø). For example, in the optative tense (OP), whether the form to be amplified involves a Class A or B verb stem, the repetitive optional-prefix tone pattern is HH, while the verb stem tone pattern is LH in the case of a Class A verb stem or 'HH in the case of a Class B verb stem.

In the partial citation paradigm which follows, both basic and amplified forms are given to facilitate comparison. The paradigm is confined to first person singular and to verbs with Class A stems. Also included are the tone patterns of Class B verb stems and cores in basic tenses.

Partial Citation Paradigm

Reading from left to right in Table V.

Unamplified			Class B Verb Stem/Core Tone Patterns in Basic Tenses	Amplified	
IP	ń-sù	'I have washed'	L	ń-kpò-sǔ	'I have again washed'
OP	ń-sú!´	'I should wash'	H	ń-kpó-sǔ	'I should wash again'
PPv	ǹ-sùé	'I had washed'	H	ǹ-kpô-sǔ	'I had washed again '
Ø	ǹ-sû	'I washed'	HL	ń-kpô-sǔ	'I washed again'
PP	ń-sùé!´	'I had washed'	H'H	ǹ-kpô-sǔ	'I had washed again'

Indicative-prefixed forms.

kí	ǹ-kí-sǔ	'I am washing'	'H	ǹ-kí- !kpó-sǔ	'I am washing again'
!mó	ḿ- !mó-sǔ	'I won't wash'	'H	ḿ-'mó- !kpó-sǔ	'I won't wash again'
kà	ń-kà-sú!´	'I have-not washed'	H	ń-kà-kpó-sǔ	'I have-not washed again'
rò	ń-dò-sú!´	'I won't wash again	H	ń-dò-kpó-sǔ	(more emphatic)
kâ	ǹ-kâ-sû	'I shouldn't wash'	HL	ǹ-kâ-kpô-sǔ	'I should not wash again'

(Partial Citation Paradigm cont'd)

Supplementary Examples: Verbs with Class B stems.

IP	ḿ-kpò-bómé	'I have again put on'
OP	ḿ-kpó- !bómé	'I should again put on'
PPv	m̀-kpô-bómé	'I had again put on'
Ø	m̀-kpô-bómé	'I again put on'
PP	m̀-kpô-bómé	'I had again put on'
kí	ǹ-kí- !kpó- !bómé	'I am again putting on'
!mó	ḿ- !mó- !kpó- !bómé	'I won't again put on'
kà	ń-kà-kpó- !bómé	'I did not again put on'
rò	ń-dò-kpó- !bómé	'I won't again put on'
kâ	ǹ-kâ-kpô-bómé	'I shouldn't again put on'

2.3 Initial optional prefixes occur before the pronominal prefix. Not only do they have little effect upon the tonal structure of basic forms, but with the exception of kɨn they are severely restricted in distribution. Table VII displays their distribution.

TABLE VII. Amplifications of Basic Forms by Initial Optional Prefixes

Initial Transform Prefixes	Basic Forms							
	IP	OP	PH	PPv	PrH	Ø	PP	Ind-Prefix
kɨ́n	x	x	-	x	x	xx	x	x
± kɨ́n + tik			x					
± kɨ́n + cáŋ			x					

The meaning of kɨ́n is generally what might be described as past optative, for example its amplification of Zero tense (Ø) produces the meaning 'should have done', e.g., à-ji 'he went' when amplified by kɨ́n produces kɨ́n-à-ji 'he should have gone'. But its transform of the optative tense (OP) and the future tense (tik) (see second row of Table VII) yields the meaning of uncertainty, e.g. á-rú'é 'they should go' when amplified by kɨ́n produces kɨ́n-á-rú!'é 'Should they go?' (-I'm not sure'). Similarly with the future tense (tik)^5 e.g. tik-à-bòŋ ójó!´ 'he will pluck tomorrow' when amplified by kɨ́n produces kɨ́n-tík-à-bôŋ ójó!´ 'he should pluck tomorrow -(but I'm not sure if he will)'. The future initial optional prefix is self-explanatory and the negative initial optional prefix cáŋ is restricted in distribution to the transform of the Past Habitual tense (PH).

In the partial citation paradigm which follows, the amplifications of Table VII are set out in first person singular and restricted to verbs with Class A stems so that comparison may be easily made with the amplified paradigm under 2.2 at the conclusion of that section.

Partial Citation Paradigm.

Reading from left to right of the first row of Table VII.

IP		kɨ́n-ń-sù	'I should have just washed'
OP	(mè ǹ-kèrá mè sè)	kɨ́n-ń-sú!´	'I think I should have washed-but I'm not sure'
PH		kɨ́n-ǹ-suk	'I should have been washing'
PPv		kɨ́n-ǹ-sùé	'I should have washed'
PrH		kɨ́n-ń-suk	'I should have been going to wash' (but plans have been changed)
Ø		kɨ́n-ǹ-sû	'I should have washed'
PP		kɨ́n-ǹ-sùé!´	'I should have washed'

(Partial Citation Paradigm, cont'd)

Indicative-Prefixed Forms.

kí	kɨ́n-ǹ-kí-sǔ	'I should be about to wash'
!mó	kɨ́n-ḿ-!mó-sǔ	'I would not have washed' (meaning difficult to ascertain.)
!kà	kɨ́n-ń-kà-sú!´	'I should not have washed'
!rò	kɨ́n-ń-dò-sú!´	'I would not have washed again' (if it hadn't been necessary)
kâ	kɨ́n-ǹ-kâ-sû	'Perhaps I should not wash' (I'm not certain).

Reading along the second row of Table VII.

tîk-ǹ-sǔk	'I will be washing'
tîk-ǹ-sû	'I will wash'
kɨ́n-tîk-ǹ-sǔk	'Perhaps I will be washing-I have actually planned to do so'
kɨ́n-tîk-ǹ-sû	'Perhaps I will wash (if plans work out)'

Reading along the third row of Table VII.

čáŋ-ǹ-sǔk	'I don't wash (never do)'
kɨ́n-čáŋ-ǹ-sǔk	'I should not have been washing'

2.4. Double amplifications are possible through the multiplication of Table V by Initial optional prefixes. These amplifications are set out in Table VIII.

TABLE VIII. Double Amplifications Through the Multiplications of Table V by Initial Optional Prefixes.

Initial Optional Prefixes	Repetitive Amplification of Basic Forms (Table V)							
	IP	OP	PH	PPv	PrH	0	PP	Indic-Pref.
kɨ́n	x	x	-	x	-	x	x	x
± kɨ́n + tik			-			x		
± kɨ́n + čáŋ			x					

Note:- crosses at intersects indicate what transformations occur.

The double amplifications are completely predictable in that while the repetitive optional prefix affects the verb stem tones and is affected by the tense of the form being amplified in the usual way, the initial optional prefixes simply add their morphemes to the morphological structure of the verb.

In the partial citation paradigm which follows, these double amplifications are set out in first person singular and restricted to verbs with Class A stems so that comparison may be easily made with the partial citation paradigm under 2.3.

Partial Citation Paradigm.

Reading across the first row of Table VIII: from left to right.

IP	kɨ́n-ń-kpò-sǔ	'I should have washed again'
OP	kɨ́n-ń-kpó-sǔ	'I should have washed again?-I'm not sure'
PPv	kɨ́n-ǹ-kpô-sǔ	'I should have washed again'
Ø	kɨ́n-ǹ-kpǒ-sǔ	'I should have washed again'
PP	kɨ́n-ǹ-kpô-sǔ	'I should have washed again'

Indicative-prefixed forms:

kí	kɨ́n-ǹ-kí-ꜝkpó-sǔ	'I should have been about to wash again'
'mó	kɨ́n-ḿ-ꜝmó-ꜝkpó-sǔ	'I would *not* have washed again'
ka	kɨ́n-ń-kà-kpó-sǔ	'I should not have washed again'
rò	kɨ́n-ń-dò-kpó-sǔ	'I would not have washed again (if it hadn't been necessary)'
kâ	kɨ́n-ǹ-kâ-kpô-sǔ	'Perhaps I should not wash again'

The second and third rows of Table VIII are omitted from the paradigm.

2.5. Finally, it should be noted that amplifications of basic tenses are rare in text data, those found being the repetitive optional prefix, and the initial optional prefixes *tik* and *čáŋ*. The repetitive optional prefix is commonly used in speech with tenses Immediate Past/Future (IP) and Optative (OP), while the initial optional prefix *tik* is usually used in speech with the Zero (Ø) tense. The other initial optional prefix *čáŋ* is commonly employed in speech with the Past Habitual (PH) tense. Other amplifications than these are nearly all elicited forms.[6]

FOOTNOTES

[1] This paper presents a preliminary analysis only. The author is currently preparing a further paper in which it is intended to state a more comprehensive analysis in terms of rules.

[2] This study is based upon the dialect of Bendeghe Ayuk in Ikom division of Ogoja Province. This dialect is almost identical with those of Etome and Abia, the nearest Etung villages to Bendeghe Ayuk and constituting with Bendeghe Ayuk the Mbuma Clan. Some differences in the verb structures have been noted between the dialect of Bendeghe Ayuk and other Etung dialects (than those mentioned above) in Ikom Division These differences involved tone, prefixation and suffixation.

[3] In Etung, each phonological word is marked by a tone pattern "consisting of a sequence of three level tones. With three syllable words, these patterns are realized as a series of three level tones spread out over the three syllables. With two syllable words, which are marked by tone patterns involving dissimilar tones for second and third tones, the pattern is realized with the final two tones compressed as a glide. With one syllable words, when the patterns involve any dissimilar tones, the tone pattern is realized as a glide." This statement is taken from T. Edmondson and J. T. Bendor-Samuel "The Tone Patterns of Etung", To be published in JAL vol. iv, 1966. In that article, it is stated that there are 12 tone patterns.

[4] A list of the tenses (and abbreviations used in this paper) constituted by minimal forms and suffixed forms is given here. Minimal Forms in Immediate past/future (IP), Optative (OP) and Zero (0). Suffixed-Forms:- Past Habitual (PH), Pluperfect-variant (PPv), Present Habitual (PrH) and Pluperfect (PP).

[5] The initial transform prefix tik has two allomorphs:-

tik	employed with 3rd person plural
tik	elsewhere

[6] However since this writing the following example of a double amplification has been found in text data:

kɨ́n - ǹ - kí - ꜝkpó - ꜝtí (ńjɨ́m)
should - I - am - again -returning - (back)

ie. 'I ought to be going back again'

Appendix VIII

PRELIMINARY REPORT ON PARA-LINGUISTICS IN MBEMBE (E. NIGERIA).

P. M. Revill

Aims

1. To report on preliminary work on the linguistic and non-linguistic signals of emotional overtones in Mbembe.
2. To indicate the direction of subsequent work.

1.0. Report on preliminary work.

1.1. Methods of Approach.

Initially, inorder to avoid a biased interpretation of emotional overtones in elicited material, a recorded text was taken as a basis. An informant was questioned on his interpretation of the speaker's feelings at certain points. Specific emotional overtones emerged in certain utterances and the informant was able to point out some of their characteristics and contrast them with the same utterances in normal speech patterns.

Secondly, the informant was asked to use utterances from text material and elicited utterances to demonstrate the effect of certain emotions on pitch, voice quality and other linguistic features. He also demonstrated certain non-linguistic features, such as gesture or facial expression which might accompany these utterances. In each case when an utterance was elicited a situation was described which might be expected to give rise to emotional overtones in speech. The situations used are noted below.

Subsequently in this report observations arising directly from unelicited text material (i.e. the first method described above) will be marked "A", those arising from the second method will be marked "B".

1.2. The initial findings have been recorded below under general headings of the emotions displayed.

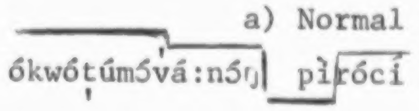
1.21 FEAR ↑ Situation. Nervousness at speaking into a recorder "He is afraid, he has never seen such a thing before."[1.]
Linguistic signals. Tense voice quality and slow speech. Short forms will be used (e.g. ńtɔ́má 'I begin?'
A v. ńtɔ́má - ò 'I begin' question marker).
Non-linguistic signals. "You will hear it in his throat", i.e. gasp for breath before speaking. "He will tight himself." i.e. sit hunched up without moving. ↓

1.22 ANGER Situation 1. A command had been given and disobeyed, the speaker is angry and wishes to enforce the command. Linguistic signals. Voice quality will be breathy either throughout the utterance or on the final syllables. Faster and more intense speech than normal. "You will speak *fast*", "you will speak with power". The pitch will be lowered on the final syllables. (Phonemic tone contrasts are preserved within this.)

Non-linguistic signals. Almost invariably signalled by B fast gestures. e.g. In the command kwú 'Come!' there will be a swift beckoning movement with one hand. In a longer command there will be a movement of the whole arm with the finger pointing downwards, "to show that you must do it". In certain contexts the linguistic features of anger may not be distinguishable from those of general excitement but, "they will know by your eyes whether you are angry or surprised". i.e. The eyes open wide and the eyeballs roll. "You may nod your head." i.e. fast.

Example showing pitch contrast. a) Normal speech.

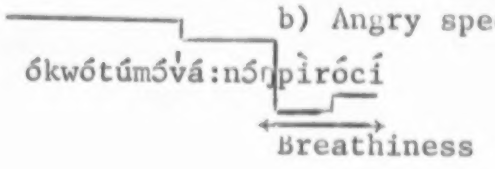
Elided form with intonation and phonemic tones.



Unelided form ókwú óṭúm ɔ̀vá:nɔ́ŋ pìrà ócí

Meaning. He-comes he-should-dash chief before he-eats.

b) Angry speech.



Situation 2. (Volunteered by informant) The speaker has been taken to the edge of a deep pit and has been told to jump down into it.

Linguistic signals. In a situation such as this which causes distaste and horror, in addition to the phenomena of voice quality, pitch and speed noted above, the exclamation cá will be used. This morpheme has no translatable meaning but it is used frequently in the language to signal distaste or merely surprise. When it signals distaste it may include an extra syllable, ci:á. The exclamation wɔ́ may be used for something surprising but it will never be used to signal distaste. (See 1.25)

Non-linguistic signals. With the exception of gestures specifically used in command the non-linguistic signals mentioned in situation 1. will occur. In addition the speaker will shrug his shoulders when using an exclamation.

1.23 RESPECT

Situation. The informant was asked to make the words of the example in 1.22 . request to a chief or older man.

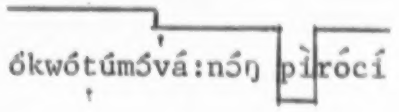
Linguistic signals. The respectful utterance is always spoken slowly and quietly. There is a tendency to glide the phonemic tones giving an undulating effect over the whole utterance. The final syllables will bear low pitch and may be preceded by juncture.

Non-linguistic signals. A slow nod of the head and a movement of both hands away from the body, the wrists turning and finishing with the palms of the hands facing upwards. The beckoning gesture with kwè: 'Come!'[2] will be slight and slow.

Example.

a) Normal speech.

Elided form with intonation and phonemic tones.

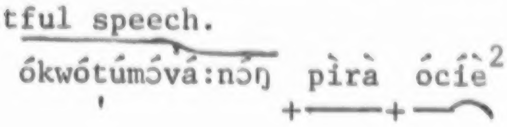


Unelided form: ókwú ót̩úm ɔ̀vá:nɔ́ŋ pìrà ócí

Meaning: He-comes he-should-dash chief before he-eats.

b) Respectful speech.

Elided form showing showing junctures.



1.24 SORROW ↕ B

Situation 1. A friend has promised to come on a visit but he has not done so. Situation which might cause disappointment.

Linguistic signals. Voice quality will be breathy on the final syllables of an utterance. These final syllables will be spoken quietly, will bear extra low pitch and may be preceded by juncture. There may be strong accent on the syllable preceding the juncture. The exclamation ɔ̀: may be used in such a situation as an expression of sympathy. The slow form ci:á may be used to express disappointment and annoyance.

Non-linguistic signals. "You will hear how you breathe." i.e. There will be a sighing intake of breath before speech.

Example.

Elided form with intonation and phonemic tones.	wùròbènbóˈkwú + kóˈkwú + cyá
Unelided form	wùrà òbèn bɛ́ òkwú kóˈkwú cyá
Meaning.	he-said that he-come Neg-he-come cya! (he did not come)

↕ B

Situation 2. A situation in which distress rather than disappointment would be called for, such as the death of a friend.

Linguistic signals. The same linguistic signals will be present as in situation 1, except that the exclamation ǹsɔ̀: will be used to express sympathy with the relatives and a high, tense exclamation wɔ́ or kwá will be used in hearing the news.

Non-linguistic signals. The speaker will beat the fist of one hand into the palm of the other.

1.25 EXCITEMENT

Situation 1. The climax of a story.

Linguistic signals. Wide relative pitch intervals, with extra high pitch and marked crescerdo on one word or syllable in the utterance. Voice quality will vary between breathiness on the low soft portions and clear intensity on the high crescendo portions. Pauses between intonation groups will decrease in length as the high climax approaches.

Example. (from text) Spacing between groups indicates length of pause.

Elided form with intonation and phonemic tones.	ŋ̀wàŋwábìròbìrɛ́mìn:á			òkwú
Unelided form.	ŋ̀wàŋwá	bìròbìrɛ́	mìn:á	òkwú
Meaning	child	small	thus	he-came

mákwùƀɛ̀	òbìròkwú	mákwùƀɛ̀	mátɛ̀tɛ̀má	pìránnàbénɛ̀bɛ́	cóníŋa
mákwùƀɛ̀	òbìrà òkwú	mákwùƀɛ̀	mátɛ̀tɛ̀ má	pìrà ńnàbènɛ̀⁺bɛ́	có'níná
they-drove-him (away)	he-came-again	they-drove-him	plenty	before they-say-that	let-him stay

òníŋá

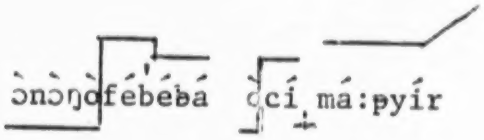
òníŋá

he-stayed.

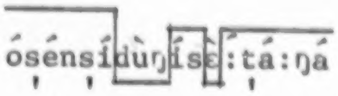
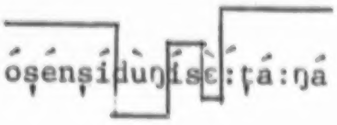
Situation 2. The speaker expresses surprise at someone's action.

Linguistic signals. There may be wide relative pitch intervals, and it is usual for one word or syllable to be extra high. This word may also be lengthened and stressed. Certain lexical items appear frequently in this climactic position. e.g. mápyír 'all', mátɛ̀tɛ̀ má 'plenty'. (When mápyír is used indicating surprise it will be lengthened on the first syllable - má:pyír 'all', when it is used in a story it may be lengthened stylistically on the second syllable-mápyí:r).

Also as in situation 1 there will be breathiness on those parts of the utterance which bear a low pitch intonation pattern. The exclamations wɔ́ or cá (short fast form) may be used to express surprise (e.g. "if you hear that one
B of your friends has been arrested.")
Non-linguistic signals. When the word ma:ᵽyir 'all' is used (i.e. as lengthened in conversation not in narrative) the finger will be drawn across the mouth.

Example	
Elided form with intonation and phonemic tones.	 ɔ̀nɔ̀ŋòféƀéƀá òcí má:ᵽyír (gesture)
Unelided form	ɔ̀nɔ̀n òfɔ́ èƀéƀé òcí máᵽyír
Meaning	Man he-killed cutting-grass he-ate all!

Situation 3. The police are looking for a man, causing general excitement. The informant was asked to show how in such circumstances he would tell someone in secret where the man was. The situation therefore implies excitement and secrecy.
B Linguistic signals. Throaty, intense voice quality. Wide relative pitch intervals and accent on the climactic word.
Non-linguistic signals. Pointing may be with the finger or with the chin or both.

Example. a) normal speech.	
Elided form with intonation and phonemic tones.	 ósénsídùŋísɛ̀:ṭá:ŋá
Unelided form.	óṣéŋ ṣá ìdùŋɔ́ sɛ̀ ɛ́ṭá:ŋá
Meaning	he-went there room his inside.
b) in excited speech.	
Elided form	 óṣénṣídùŋísɛ̀:ṭá:ŋá

1.26 Forms dictated by social situation.

Some forms have been found which cannot be described as reflecting feelings on the part of the speaker, but they will be used in certain social situations.

a) Final feature -é̀:/ì

(i) This will be used in story-telling or in a village announcement to give emphasis to certain statements.

A e.g. ɔ̀vá:nɔ́ŋ òníŋ é̀:

chief was

There was once a chief...

ókwót̩úmɔ́vá:nɔ́ŋì pìrà ócí̀:

he-should-come dash chief before he-eats.

(i.e. general announcement to the village)

(ii) It is used in conversation to ensure better understanding on the part of the hearer. It is frequently employed for this purpose in speaking to a child or to a foreigner. If an utterance has been misheard it will be repeated with the final feature attached, and the final feature will be heavily stressed.

B e.g. ìnɔ̀:nì

Bird (it is)

(iii) The use of this form for emphasis may be associated with distance from the speaker to the hearer. e.g. The form í: 'yes' will be used when speaker and hearer are close to one another. At a distance of about 12 yards or more the form íyè: will be used for 'yes'.

(iv) The final feature also has a polite connotation and will be used for instance in summoning a chief with the word kwé[illegible] 'come!' (cf. kwú 'come!' familiar, non-emphatic form)

(v) The use of the final feature may indicate cheerfulness or playfulness, in which case it will be lengthened and spoken in a singing tone.

b) Use of unelided forms.

When speaking to a foreigner many speakers will use unelided forms.

e.g. òs̩éŋ s̩ídùŋɔ́ sɛ́:t̩á:ŋá

He-went there-room his-inside

It is interesting to notice that the unelided form will not be used in speaking to a child.

2.0 Direction of subsequent work.

The above findings show the result of very preliminary work using one informant and recorded text material mainly of the narrative type. Further study would need to include observations within the real cultural situation and the use of recorded conversations. The present study takes no account of the degree of emotion shown or of variation between individual temperaments.

The observation of section 1 may be helpfully summarized in Matrix form. Such a display will indicate areas in which ambiguity might arise unless the cells of all the matrices were examined. Three linked matrices are shown, the vertical parameter of the linguistic and non-linguistic matrices shows the various emotions, the horizontal parameter shows linguistic and non-linguistic emotional signals respectively. Below these two matrices is a third showing the effect of social situations superimposed on the emotional situations.

Subsequent work might be expected greatly to increase the complexity of the matrices. The display on Page 8 shows how the area of linguistic ambiguity between anger, distaste and excitement is cancelled by the application of the non-linguistic matrix. The addition of further matrices and of details within existing matrices would be expected to reduce further the possibility of ambiguity.

Key to Matrices on Page 8

Linguistic signals

B - Breathiness
LF - Low on final syllables
Q - Quick intense speech
WI - Wide relative intervals
LC - Length on climactic word
AC - Accent " " "

Social Situation

M - Mime.
EH - Exaggerated hand movements
ề:A Accent on ề:

AJ - Accent preceding juncture

JF - Juncture before final low syllables

S - Slow speech

G - Gliding pitches

SS - Slow soft speech

T - Tense

L - Lengthening of all syllables

☐ Area of linguistic ambiguity

Non-linguistic signals

E - Eyes open wide and rolling

QP - Quick gestures, pointing

QN - Quick nod

S - Shrug shoulders with ci:á (Exclam.)

I - Intake or sigh before speech

B - Beating fist of one hand into palm of other

H - Gesture of both hands with palms turning upwards

SN - Slow nod

IG - Gasping intake of breath

FOOTNOTES

[1] Quotations are from informant's comments.

[2] See section 1.26 a) iv

LINGUISTIC SIGNALS | EMOTION | NON-LINGUISTIC SIGNALS

PHONOLOGICAL					LEXICAL	GRAMMATICAL		FACE	HANDS	HEAD	BREATH	BODY	
Voice quality	Pitch	Length & Accent	Juncture	Speed & Intensity	Exclamations etc.								
+ B	+ LF			+ Q			ANGER	+ E	± QP	± QN			
+ B	+ LF			+ Q	± ci:á		DISTASTE					+S	
+ B	± WI	± LC ± AC		+ Q	± wǫ́ cá	± mą́pyír mátɛ̀tɛ̀má	EXCITE-MENT						
+ B	+ LF	± AJ	± JF	+ S	± ɔ̀ ci:á		SORROW				+ I		
+ B	+ LF		± JF	+ S	+ ńsɔ̀: wɔ́ kwá		DISTRESS		+ B				
	+ G		± JF	+ SS			RESPECT		± H	+SN			
+ T		+ L		+ S		shortened forms.	FEAR				+ IG		SOCIAL SITUATION
		+ -é̀: A			+ -é̀:				± EH				Emphasis Repetition
					+ -é̀:								Emphasis Clarity
					+ -é̀:	± unelided forms			± EH			± M	Foreigner
					± -é̀:				± EH				Child

See key on pages 8 and 9.

Appendix IX

AN INTERIM WORKSHOP REPORT ON THE PHONOLOGICAL DATA OF AGBO

Klaus and Janice Spreda

Table of Contents

1. Introduction.
2. Phonological Hierarchy.
3. Non-suspect CV Patterns.
4. Interpretation.
5. Phonetic Workchart.
6. Evidence for Uniting or Separating Phones.
7. Chart of Phonemes.
8. Formational Statement of Phonemes.
9. Distribution of Phonemes.
10. Suprasegmental Features.
11. Unsolved Problems.
12. Orthography.
13. Text.
14. Word Lists and Comparative Notes.

I. Introduction

Non-linguistic

The Legbó language is spoken by the people of the Agbó clan which inhabits the banks of the Cross River. About two thirds are living on the western bank in Afikpo Division, the rest live on the eastern bank in Obubra Division. Both divisions are in Abakaliki Province.

Their usual settlement is a compact village of several hundred up to over a thousand inhabitants. As these villages form townships they are often called wards. A township is a cluster of two or three villages directly adjoining as a centre and others loosely scattered around it in a couple of miles' distance. The villages or wards are made up of compounds which can vary greatly in size.

The clan consists of four townships with roughly the following numbers of inhabitants:

Igbo Ekureku	12.000 +
Igbo Imabana	8.000 +
Adadama	6.000 +
Itigidi	2.000 +

The figures are approximations based on the unpublished census results of 1964. Igbo Imabana is the part situated in Obubra Division.

All townships are accessible by road all the year round and have a daily lorry service. The markets are frequented by members of the surrounding clans and Igbo traders. However the outside influence does not seem to affect the clan too strongly.

Linguistic

No mention of the language in linguistic literature has been discovered. However observations made in passing seem to indicate a certain relationship with the neighboring languages Yakur and Mbembe (in lexical items).

Efik used to be the trade language and the majority of men have some knowledge of it, however the use of it is decreasing in favor of English. The women are mostly monolingual.

Each of the townships speaks a different dialect but the dialects are mutually intelligible. This statement presents the dialect of Adadama.

The language has been studied in Adadama during three periods totalling thirteen months between August 1964 and January 1966[1]. The principal informant was Mr. John Ebong, but about a dozen further informants of both sexes have been used to various degrees.

This preliminary statement follows the outline suggested in "Format for a Routine Phonological Statement", West Africa Technical Helps No. 4 of the Institute of Linguistics.

We are greatly indebted to Mr. R. Stanford and Dr. J. T. Bendor-Samuel for their advice during the studies and in producing this statement.

Symbolization

Mid tone and stress are not marked.

N stands for syllabic nasal.

II. Phonological Hierarchy

The following levels are pertinent in the phonological hierarchy of Legbó:

syllable level
word level
utterance level

The Syllable

The syllable is defined as the tone bearing unit. Its structure can be summarized in the following formula:

$$\begin{array}{ccc} \pm \text{Marg}_1 & + \text{Nuc} & \pm \text{Marg}_2 \\ \text{C} & \text{N/V} & \text{C} \end{array}$$

Restriction: If the nucleus is manifested by N the margins are obligatorily absent.

Within the syllable the nucleus is considered the tone bearing unit. For distribution of phonemes in these three slots see section 9.

The syllable functions as a unit on the next higher level, the word level.

The Word

The word can be defined as the stress bearing unit (stress group). As to distribution of the stress within the word see section 10.

The second criterion for the word is potential pause on either side of it.

The word consists of one to six syllables. For details about distribution of syllables within the word see section 9. There, details about the three types of phonological words set up according to distributional criteria can be found as well.

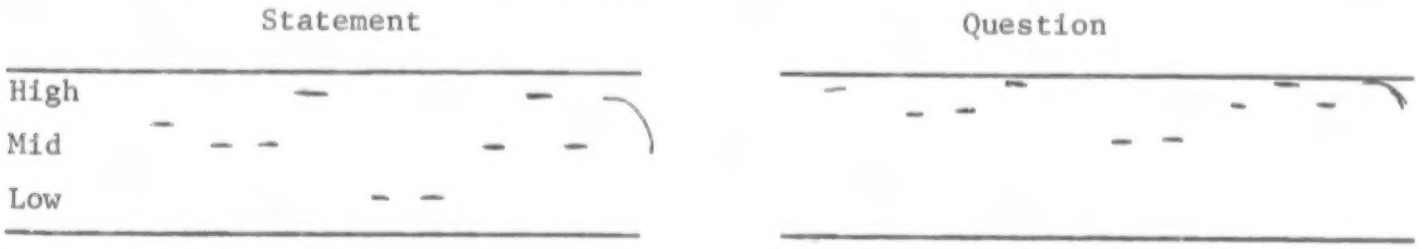
The word has a suprasegmental feature of tenseness which is discussed in section 10. Another feature of the word is a limited vowel harmony, for details see section 9.

The phonological word largely corresponds to the word unit in the grammatical hierarchy. It functions as a unit on the next higher level in the phonological hierarchy, the utterance.

The Utterance

The utterance is made up of phonological words. Its criteria are pause before and after it and secondly a slightly raised pitch on the first syllable with a decrescendo of prominence. The final syllable has a rapid pitch drop with a decrescendo in prominance plus a very slight nasalization. The main body of the utterance is level.

The question utterance is a type or variant with the following extra features: The contour as a whole is higher in pitch. It is more strongly modulated and spoken louder. The last syllable is also raised.



[´´> atata'ma i'sɔǀ bafuu'gi]	[´´> atata'ma i'sɔǀ bafuu'gi]
/ atatamá ȋsɔ̀ bafúugí./	/ atatamá ȋsɔ̀ bafúugí?/
'Adadama all they-are-coming.'	' Adadama all they-are-coming?'

A feature of the utterance is elision. For elision rules see section 11.

Tentatively one can say that the phonological utterance corresponds roughly to the sentence unit in the grammatical hierarchy. It is however likely that one or more phonological levels between the word and the utterance must be constituted (see pause [ǀ] in the examples above), but the necessary investigations have not yet been carried out.

III. Non-suspect CV Patterns

The non-suspect patterns of the syllable are:

V.	[è.bè.bè]	'dust'	[ɛ.gɔ̀]	'cloth'
	[à.nàn]	'oil'		
CV.	[lɛ̀.màl]	'door'	[à.sɔ]	'soap'
	[gɛ̀.tà.pa]	'scar'		
CVC.	[dɛ̀n]	'eye'	[lɛ̀vɔ̀l]	'town'
	[e.lo.loŋ]	'snail'		

For further syllable patterns established through interpretation and word patterns see section 9.

IV. Interpretation

It proved convenient to base all the interpretation on the non suspect syllable patterns and also to lean heavily on tone as being a feature of the syllable and marking the syllable nucleus.

A. Single segments which may be consonants or vowels:

non-syllabic:

[y] word	initially	[yɔ̀ɔ]	'weave'	[yaa]	'scratch'
	medially	[ɛ̀yàli]	'paddle'	[àyɛ]	'he'
[w] word	initially	[wàdum]	'man'	[wákà]	'brother'
	medially	[ɛ̀wɔ̀ŋ]	'storm'	[àwɔ]	'you sg.'

These are interpreted as C because of the predominant syllable pattern CV/CVC. There is no tone on [y] or [w].

Syllabic

[i] word	initially	[iban]	'k.o. fish'	[ìnɔ̀n]	'hen'
	medially	[èbin]	'mortar'	[lìkɔl]	'bush'
	finally	[ɛ̀yàli]	'paddle'	[èti]	'stick'
[u] word	initially	does not occur			
	medially	[gezuŋí]	'night'	[m̩bèkum]	'tortoise'
	finally	[gitù]	'k.o. lizard'	[èyu]	'wave'

These are interpreted as V according to the predominant syllable pattern CV/CVC. Also the V in question bear their own tones.

B. Segments which may be clusters or single units:

VN or syllabic N:

[m̩]	[m̩̀panà]	'worry'	[m̩̀bèke]	'pawpaw'
[ŋ̩]	[ŋ̩sí]	'I made'	[n̩dumi]	'sandfly'
[ŋ̩]	[ŋ̩kɔ]	'I hated'	[ŋ̩̀gwɔ̀gwɔ́]	'promise'

These are interpreted as syllabic N. They bear their own tone.

Long V or VV

[dyàákpu]	'cassava'	[essíi]	'he is doing'
[àtɛ́ɛmi]	'farm'	[dòom]	'burn!'
[zee]	'see!'	[ewùu]	'he has already grated'
[ɛɛ̀kɔ́ɔ́gi]	'he did not vomit'		

These are interpreted as vowel clusters because each vowel bears its own tone though they are very closely knit together and because there are vowel clusters in the language according to interpretation in paragraph C.

C. Sequences which may be clusters or units:

[kp]	[kpakpa]	'groundnut'	[ákpaŋ]	'plate'
[gb]	[gbòŋgbòŋ]	'tin'	[lɛgbà]	'time'
[dz]	[dzi]	'eat!'	[adzáŋì]	'k.o. ant'

These are interpreted as units (C) because of the predominant syllable pattern CV/CVC, while there are no non-suspect C clusters.

Besides the above which involve consonants only there is a series of sequences consisting of a consonant plus either the vowel [i] or [u] or plus labialization or palatalization:

C^yV (palatalized C followed by V) or CiV (C followed by V-cluster):

[ty]	[tyɔtyɔ]	'small frog'	[ètyíŋ]	'porcupine'
	[tyaki]	'to be dried'	[ǹtyanŋ]	'tin'
	[tyɛgi]	'fell!'	[etùtye]	'palmwine'
	[tyème]	'divide!'	[ɛ̀tyɛ̀]	'imitation'
[dy]	[dyààkpu]	'cassava'	[àdyí]	'Festival'
	[dyai]	'shallow'	[lɛdyá]	'sacrifice'
	[dyàla]	'be astride!'	[ɛdyɔgɔ́n]	'evening'
			[lidyógo]	'cluster'

C^wV (labialized C followed by V) or CuV (C followed by V-cluster):

[kw]	[kwàl]	'canoe'	[ɛkwááli]	'he tried'
	[kwe]	'shout!'	[ŋ̀kwɔ]	'a weekday'
			[ekwe]	'he shouted'
			[ɛ̀kwɛn]	'fire'
[gw]	[gwànɔ]	'woman'	[lìgwà]	'leaf'
	[gwɔ]	'flay!'	[igwɔ]	'debt'
	[gwe]	'recultivate'	[egwe]	'he recultivated'
	[gwu]	'whistle!'	[ligwuú]	'whistle'
[ŋw]	[ŋwa]	'go to bed'	[ɛŋwá]	'flood'
			[ŋ̀ŋwɛ̀nɛ̀]	'book'

These are interpreted as palatalized and labialized consonants

1. Because of the predominant syllabel pattern CV/CVC.
2. Because the element in question, i.e. the [y] and the [w], does not bear tone.

Contrasting both with the group above and with the non-syllabic group under paragraph A is the following group:

C^yV or CiV or CiyV

[pi]			[gepíon]	'afternoon'
			[ɛpia]	'market'
			[ɛ̀píɔ́ŋ]	'hornbill'
			[ɛ̀pìàɯì]	'k.o. grass'
[bi]	[biala]	'singe!'	[ɛ́bìà]	'native doctor'
	[bià]	'bad'		
	[bbiò]	'black'	[m̩̀bíókaŋ]	'charcoal'
	[biɛi]	'suck!'	[gèbiɛ̀]	'darkness'
[di]	[didía]	'be sweet'		
[vi]	[viai]	'squeeze'	[lɛ̀vià]	'driver ant'
			[àviaŋgba]	'scissors'
[wi]			[ewia]	'hips'

C^wV or CuV or CuwV

[bu]	[bùa]	'follow'	[gèbùà]	'water storage pot'
[tu]	[tua]	'be strong!'	[ètùán]	'bush cow'
			[etui]	'he danced'
[du]	[dua]	'hide!'	[ìdua]	'sleep'
			[edui]	'he beat'
[ku]	[kùa]	'open'	[ekúa]	'he opened'
[gu]	[gua]	'pull out'	[egua]	'he pulled out'
[vu]	[vua]	'pile'	[lívùàl]	'k.o. ant'

These are interpreted as consonant followed by two vowels (CiV and CuV) because the [i] and [u] bear their own tones. Since by definition of the syllable there is only one tone to the syllable this means that the two vowels belong to different syllables. However, the two syllables are phonetically closely knit together, as in normal speech both tones are heard only if they are different. This distinguishes this group from the one under paragraph A, where both tones are always clearly heard, and where there is an audible [y] or [w] between the syllables.

The following group is similar to the one above but has the [i] as the second member of the cluster. The parallel constellation with the back vowel [u] does not exist, since [u] occurs only after [u], and this is treated under section B.

CVi or CVyi

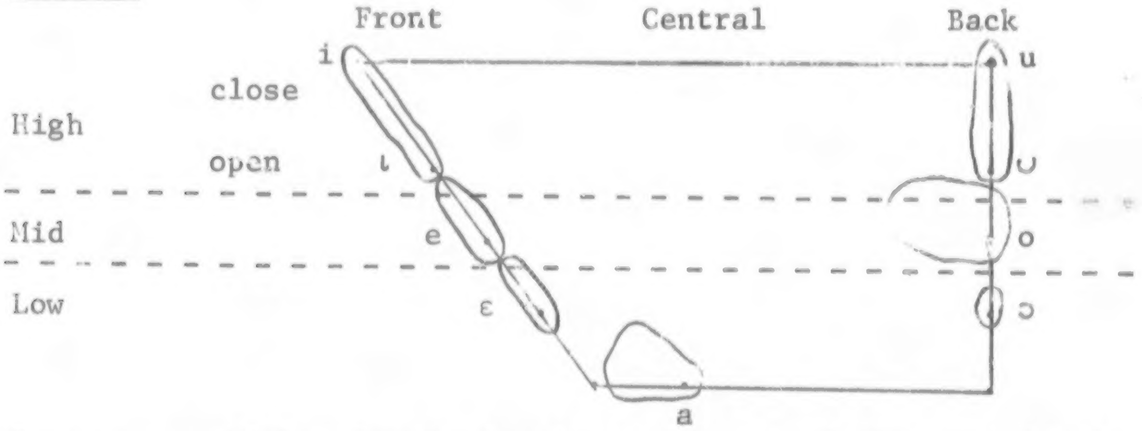
[ekpéi]	'dove'	[livɛì]	'wing'
[gɛ̀wai]	'comb'	[èdùì]	'pepper'
[enìí]	'he has already given'	[ettoi]	'he is crying'
		[ɛffɔi]	'he is returning'

These are also interpreted as vowel clusters across syllable boundaries, the syllables being closely knit together, because each vowel bears its own tone, but there is no consonant audible between them.

V. Phonetic Workchart

Consonants:		bilab.	labio-dent.	alveol.	alveo-palat.	palat.	labio-velar	velar	labialized velar
Stops	vl.	p		t	ty		kp	k	kw
	vd.	b		d	dy		gb	g	gw
Fricatives	vl.		f						
	vd.		v					ɣ	
Sibilants	vl.			s					
	vd.			z					
Affricates	vd.			dz					
Nasals	vd.	m		n	ñ			ŋ	ŋw
Laterals	vd.			l					
Semivowels	vd.	w				y			
Syllabics	vd.	m		n				ŋ	

Vowels:



Features on higher level: fortis as feature of the word final nasalization as feature of the utterance.

VI. A. Evidence for Uniting Phones as Members of the Same Phoneme

[g] [γ] = /g/ as fluctuating in certain environments but never in contrast.

Word initially

[g] before central and back vowels

[γ] ~ [g] before front vowels

[gabi]		'entwine!'
[gali]		'lift'
[gèti]	~ [γèti]	'tree'
[geñédze]	~ [γeñédze]	'banana'
[gɛ̀tɔ́ɔ́]	~ [γɛ̀tɔ́ɔ́]	'work'
[gitù]	~ [γitù]	'lizard'

Generally women and softly spoken men prefer [γ] while older men and forcefully speaking people prefer [g].

Word medially

[g] always as C in nouns of the pattern N/V.CV always when gV is reduplicated

[γ] ~ [g] elsewhere independent of surrounding vowels:

[ɛgɔ̀]		'cloth'
[ŋgá]		'bullet'
[agà]		'needle'
[ègógó mbala]		'sweet potato'
[tugi]	~ [tuγi]	'drive away'
[kpege]	~ [kpeγe]	'announce'
[bɛ̀ɛ́gɛ́]	~ [bɛ̀ɛ́γɛ́]	'children'
[koogo]	~ [kooγo]	'show'
[dɔgɔ]	~ [dɔγɔ]	'sleep'
[kpaga]	~ [kpaγa]	'lock'

Generally [γ] is more frequent than [g].

[m̩] [m] = /m/ ; [n̩] [n] = /n/ ; [ŋ̩] [ŋ] = /ŋ/.
as being in complementary distribution.

[N̩] carries its own tone and stands in the nucleus of the syllable

[N] (non-syllabic) has no tone and stands always in the margin of the syllable.

[m̀bɔ́ŋ]	'mosquito'	[mana]	'catch!'
[dzem̩̀ma]	'today'	[ǹzàm]	'back'
[m̩̀panà]	'worry'	[lɛ̀mà]	'door'
[ǹ̩tɛ̀tɛ̀bɛ]	'grasshopper'	[ànàn]	'oil'
[ń̩dɛ́na]	'there'	[nɛni]	'own!'
[n̩nii]	'I gave'	[num]	'take!'
[ŋ̩waani]	'I cooked'	[ànaŋ]	'four'
[ŋ̩́kɛ]	'into'	[eveŋi]	'sandbank'
[ŋ̩gá]	'bullet'		

[i] [ɩ] = /i/ and

[u] [ʊ] = /u/ as freely fluctuating in certain environments but never in contrast:

More specifically:

Older people will almost always prefer [ɩ] or [ʊ] in CVN syllables, while young people tend to use [i] and [u] but sometimes use [ɩ] and [ʊ].

[àmin]	~ [àmɩn]	'I'
[ifín]	~ [ifɩ́n]	'cricket'
[èyim]	~ [èyɩm]	'onion'
[(g)èzin]	~ [(g)èzɩn]	'waist'
[sìn]	~ [sɩ̀n]	'hair'
[wàdum]	~ [wàdʊm]	'man'
[ènùŋ]	~ [ènʊ̀ŋ]	'salt'
[ǹzúŋ]	~ [ǹzʊ́ŋ]	'nose'
[num]	~ [nʊm]	'take!'

Sometimes older people will give [ɩ] and [ʊ] word medially before a syllable beginning with N or /l/, while young people almost never do this:

[n̩ɩína]	∿	[n̩ñɩ́na]	'I placed'
[ɛ̀kpàmìnà]	∿	[ɛ̀kpàmɩ̂nà]	'bed'
[lèbilà]	∿	[lèbɩlà]	'bundle'
[v̀ìli]	∿	[vɩ̂li]	'cut!'
[n̩dumi]	∿	[n̩dʊmi]	'sandfly'
[gèzùŋà]	∿	[gèzʊ̀ŋà]	'sweat'
[gèkulì]	∿	[gèkʊlì]	'many'

VI. Evidence for Separating Phones

	[p]		[b]		[kp]		[gb]
ɛ́pà	'hawk'	ɛbá	'centipede'	ɛ̀kpa	'body'	ɛ̀gbà	'talisman'
pa	'pluck!'	ba	'ask!'	kpa	'drum!'	gba	'join!'
péle	'excl. of surprise'	bèlé	'then'				
pàla	'search!'	bàla	'remind'				
apó	'you belched'	abo	'you died'	akpó	'cheek'	agbó	'Agbo pl.'
épò	'he will belch'	ébo	'he will die'	ékpò	'type of tree'	egbó	'Agbo sg.'
		lɛ̀báal	'breast'			lɛgbàl	'time'
		lèbèl	'beard'			lègbel	'flute'
				ŋkpá	'spear'	ŋgbà	'junction'
				ìkpaɣan	'button'	igbàɣán	'birdtrap'

	[k]		[g]		[kp]		[gb]
ɛ̀kà	'mother'	ɛ̀gà	'k.o. rope'	ɛ̀kpa	'body'	ɛ̀gbà	'talisman'
ɛkɔ	'he hated'	ɛgɔ̀	'cloth'	ɛkpɔ	'drawnet'	ɛgbɔ	'he jumped'
àkà	'mothers'	àgà	'k.o. plant'	àkpà	'tongs'	ágbà	'chin'
ŋká	'..with'	ŋgá	'nut'	ŋkpá	'spear'	ŋgbà	'junction'
ekò	'friendship'			ekpo	'he stayed	égbó	'Agbo sg.'

	[k]		[g]		[kw]		[gw]
ɛ̀kà	'mother'	ɛ̀gà	'k.o.rope'	ɛkwa	'instr. for tapping'	ɛ̀gwà	'hunger'
ɛkɔ	'he hated'	ɛgɔ̀	'cloth'	ɛ̀kwɔ̀	'snail'	ɛgwɔ	'she weaned'
àkà	'mothers'	àgà	'k.o.palm'	àkwàŋ	'nat.bed'	agwa	'you drank'
		ŋgá	'nut'			ŋgwa	'I drank'

	[k]		[g]		[kw]		[gw] (con't)
ɛkɛɛ́n	'torch'			ɛ̀kwɛn	'fire'		
ku	'stay!'			kwu	'chase'		
ŋ̂kali	'trick'			ŋkwali	'I am trying'		
				kwe	'shout!'	gwe	'recultivate'

	[t]		[ty]		[dy]		[d]
				àdyí	'a feast'	ádì	'you will say'
lɛ̀tál	'stone'			lɛdyál	'sacrifice'	lɛ̀dal	'tongue'
				lidyàl	'rattle'	lìdàl	'story'
		ityè	'fear'	idyi	'dew'		
		gètyè	'part of roof'	gèdyegè	'being tall'		
étìŋ	'he will lay'	ètyíŋ	'porcupine'	edyiŋa	'he shivered'		
		ɛtyaki	'it was dry'	ɛ̀dyàgàn	'tree fork'		
ɛ̀tɛ	'father'	ɛ̀tyɛ̀	'imitation'			ɛdɛ́	'he greeted
ɛ̀tɔ́	'house'	ɛtyɔ	'he quarreled'			ɛ̀dɔ	'again'
gɛ̀tɔ́	'work'					gɛ̀dɔ́	'throat'
ètètɛ̀la	'madman'	ètyètyèna	'stranger'				

	[z]		[dz]		[dy]		[d]
àzì	'blood'	adzi	'you ate'	àdyí	'a feast'	ádì	'you will say'
		lídzi	'food'	idyi	'dew'		
		gèdzèɛ̀	'being wide'	gèdyegè	'being tall'		
		lídzàŋà	'quarreling'	ètidyàgàn	'forked stick'		
		gɛ̀dza	'bladder'	lɛdyál	'sacrifice'		
ɛzɛ́ɛ	'he walked'	ɛdzɛ́	'he finished'			ɛdɛ́	'he greeted'
èzì	'bushpig'	èdzì	'sun'				
gezèè	'thorn'	gèdze	'yam'				
zee	'see!'	dze	'be wide'				
		ɛdzɔ́	'he forgot'			ɛ̀dɔ	'again'

	[s]		[z]
ɛ̀sɛ̀	'leopard'	ɛzɛ́ɛ	'he walked'
gɛ̀sɛ́	'tail'	gɛ̀zɛ̀ɛ	'journey'
esí	'he made'	èzì	'bushpig'
àsi	'water'	àzì	'blood'
su	'steal!'	zu	'rot!'

	[f]		[v]		[w]
ɛfa	'power'	ɛ̀va	'dog'	ɛwa	'lightning'
ɛ́fɛ̀nɛ̀	'he will shave'	ɛ́vɛnɛ	'ladder'		
efíla	'it germinated'	evíla	'it was distant'		
éfu	'he will come'	èvù	'monkey'	éwu	'he will grate'
èfi	'boil'	eví	'he went out'		
		vaan	'wrestle!'	waan	'cook!'
		vɔɔ	'flow!'	wɔɔ	'bail out!'

	[w]		[ŋw]		[gw]
wà-	'child'	ŋwa	'go to bed!'	gwa	'drink!'
ɛwa	'lightning'	ɛŋwá	'flood'	ɛ̀gwà	'hunger'
éwu	'he will grate	èŋwùlù	'snuff'		
		líŋwà	'fingernail'	lìgwà	'leaf'

	[γ]		[y]
aviγa	'you wedged'	àvíiyà	'brains'

	[n]		[ñ]		[ŋ]		[ŋw]
ànààn	'oil'			ànaŋ	'four'		
akpaan	'servants'			ákpaŋ	'plate'		
ɛ̀kpán	'cobra'			ɛ̀kpàŋ	'cough'		
ɛmáání	'she delivered'			ɛmááŋi	'it is sour'		
				n̩títìŋa	'broom'	líŋwà	'fingernail'
enii	'he gave'	ɛ̀ñì	'elephant'	eveŋi	'sandbank'		
ɛ̀nàà	'skin eruption'	ɛ́ñà	'age set'			ɛŋwà	'flood'
ɛnàanàa	'sediment'	ɛñana	'he scattered'	gɛ̀káŋa	'pangoli'		
		àkàñà	'bell'				
		eñéle	'insult'	èŋèliŋa	'k.o. tree'		

	[i]			[ɩ]		[e]		[ɛ]
gèzi	'rope'				gezee	'thorn'		
lídzì	'food'				lèdzì	'day'		
dzi	'eat!'				dze	'be wide'		
èdi	'palm'				ede	'he is'		
vìli	'cut!'	~	vɩ̀li	'cut!'	vèli	'lend!'		
àmin	'I'	~	àmɩn	'I'	amèen	'it has germinated'		
emmíni	'he is lying'	~	emmɩ́ni	'he is lying'	emméni	'it is germinating'		
					zee	'see!'	zɛɛ	'walk!'
					kpe	'teach!'	kpɛ	'sell!'
					gèvè	'fishpond'	gɛ̀vɛ̀	'foot'
					étɛ̀è	'it will rain'	ɛ̀tɛ́ɛ́	'his father'
fini	'give!'	~	fɩni	'give!'			fɛnɛ	'shave!'
efíli	'he is cutting'	~	efɩ́li	'he is cutting'			ɛfɛlɛ	'it is light'
ǹ̩zíŋìlì	'egg'	~	ǹ̩zɩ́ŋɩ̀lì	'egg'			n̩zɛ́ŋi	'I walked'

	[a]		[ɔ]
lɛval	'running'	lɛ̀vɔ̀l	'town'
ɛ̀gà	'fishtrap'	ɛgɔ̀	'cloth'
ɛ̀kpa	'body'	ɛkpɔ	'net'
fa	'rub!'	fɔ	'return'

	[o]		[ɔ]
likól	'sleeping mat'	lìkɔL	'bush'
abó	'you slashed'	àbɔ	'you pl.'
akpó	'cheek'	àkpɔ́	'rubber'
lìvol	'k.o. fruit'	lìvɔl	'abdomen'
to	'cry!'	tɔ	'fall!'

	[u]			[ʊ]		[o]
èku	'white ant'				ekò	'friendship'
ékpù	'crowd'				ékpò	't.o. tree'
èyu	'wave'				èyò-	'friend'
lèkul	'navel'				lèkòl	'neck'
èvulì	'plus'	~	èvʊlì	'plus'	èvóli	'Ikwo man'
ǹ̩zùzùŋ	'fly'	~	ǹ̩zùzʊ̀ŋ	'fly'	èzòzòŋ	'smoke'
évùm	'he will move'	~	évʊ̀m	'he will move'	èvòm	'tsetse fly'
bàdum	'men'	~	bàdʊm	'men'	bádòòm	'they will burn'

VII. Chart of Phonemes

Consonants		bilabial	labio-dental	alveol.	alveo-palat.	palat.	labio-velar	velar	labio-lized velar
Stops	vl.	p		t	ty		kp	k	kw
	vd.	b		d	dy		gb	g	gw
Fricatives	vl.		f						
	vd.		v						
Sibilants	vl.			s					
	vd.			z					
Affricates	vd.			dz					
Nasals	vd.	m		n	ñ			ŋ	ŋw
Laterals	vd.			l					
Semivowels	vd.	w				y			

Vowels	Front	Central	Back
High	i		u
Mid	e		o
Low	ɛ	a	ɔ

VIII. Formational Statement of Phonemes

For further examples of the phonemes and their submembers see sections 6 A and B.

Consonants

/p/ [p] voiceless bilabial stop

[ɛpà]	/ɛpà/	'hawk'
[po]	/po/	'belch!'

/t/ [t] voiceless alveolar stop

[èti]	/èti/	'stick'
[ta]	/ta/	'shoot!'

/ty/ [ty] voiceless palatalized alveolar stop

[tyɔ]	/tyɔ/	'quarrel!'
[ityè]	/ityè/	'fear'

/kp/ [kp] voiceless labio-velar stop

[ɛ̀kpa]	/ɛ̀kpa/	'body'
[kpɔ]	/kpɔ/	'nail!'

/k/ [k] voiceless velar stop

[líkól]	/líkól/	'sleeping mat'
[kɔ]	/kɔ/	'hate!'

/kw/ [kw] voiceless labialized velar stop

[kwàl]	/kwàl/	'canoe'
[ɛ̀kwɔ̀]	/ɛ̀kwɔ̀/	'snail'

/b/ [b] voiced bilabial stop

[àbɔ]	/àbɔ/	'you pl.'
[ba]	/ba/	'ask!'

/d/ [d] voiced alveolar stop

[gɛ̀dɔ́]	/gɛ̀dɔ́/	'throat'
[di]	/di/	'say!'

/dy/ [dy] voiced palatalized alveolar stop

[lɛdyá]	/lɛdyá/	'sacrifice'
[dyiŋa]	/dyiŋa/	'shiver!'

/gb/ [gb] voiced labio-velar stop

[lɛgbà]	/lɛgbà/	'time'
[gbɔ]	/gbɔ/	'jump!'

/g/ [g] voiced velar stop

[ɣ] voiced velar fricative

[g] occurs word initially before non front vowels and word medially in VCV nouns and in reduplicated syllables.

[agà]	/agà/	'needle'
[ègógó]	/ègógó/	'sweet potato'
[gabi]	/gabi/	'entwine!'

[g] and [ɣ] fluctuate word initially before front vowels and word medially between any vowels except in VCV nouns and reduplicated syllables.

[g] and [ɣ] con't.				
		[tugi] ~ [tuɣi]	/tugi/	'drive away'
		[gɛ̀tɔ́ɔ́] ~ [ɣɛ̀tɔ́ɔ́]	/gɛ̀tɔ́ɔ́/	'work'
/gw/	[gw]	voiced labialized velar stop		
		[ɛ̀gwà]	/ɛ̀gwà/	'hunger'
		[gwe]	/gwe/	'recultivate!'
/f/	[f]	voiceless labio-velar fricative		
		[ifiín]	/ifiín/	'cricket'
		[fɔ]	/fɔ/	'return!'
/v/	[v]	voiced labio-dental fricative		
		[ɛ̀vààm]	/ɛ̀vààm/	'cow'
		[vina]	/vina/	'go home'
/s/	[s]	voiceless alveolar grooved fricative		
		[ɛ̀sà]	/ɛ̀sà/	'back yard'
		[si]	/si/	'do!'
/z/	[z]	voiced alveolar grooved fricative		
		[ǹ̩zàm]	/ǹzàm/	'back'
		[zee]	/zee/	'see!'
/dz/	[dz]	voiced alveolar affricate		
		[lèdzì]	/lèdzì/	'day'
		[dzè]	/dzè/	'crocodile'
/m/	[m]	voiced bilabial nasal		
	[m̩]	syllabic voiced bilabial nasal		
		[m̩] occurs as the nucleus of a syllable, bearing tone		
		[dzem̩̀ma]	/dzem̀ma/	'today'
		[m̩̀bèke]	/m̀bèke/	'paw paw'
		[m] occurs as syllable margin without its own tone		
		[aamán]	/aamán/	'our'
		[mana]	/mana/	'hold!'
/n/	[n]	voiced alveolar nasal		
	[n̩]	syllabic voiced alveolar nasal		
		[n̩] occurs as the nucleus of a syllable, bearing tone		
		[ǹ̩dá]	/ǹdá/	'where'
		[ǹ̩zàm]	/ǹzàm/	'back'

[n] occurs as syllable margin without tone of its own

[èzin]	/èzin/	'waist'
[num]	/num/	'take!'

/ñ/ [ñ] voiced alveo-palatal nasal

[n̩ñàñàŋ]	/nňàñàŋ/	'horse'
[ño]	/ño/	'look after!'

/ŋ/ [ŋ] voiced velar nasal

[ŋ̩] syllabic voiced velar nasal

[ŋ̩] occurs as the nucleus of a syllable, bearing tone

[ŋ̩́kɛ]	/ŋ́kɛ/	'into'
[ŋ̩gá]	/ŋgá/	'bullet'

[ŋ̩] occurs as syllable margin without its own tone

[ànaŋ]	/ànaŋ/	'four'
[lɛ̀zàŋà]	/lɛ̀zàŋà/	'river'

/ŋw/ [ŋw] labialized voiced velar nasal

[ŋ̩̀ŋwɛ̀nɛ̀]	/ŋ̀ŋwɛ̀nɛ̀/	'book'
[ŋwa]	/ŋwa/	'go to bed!'

/l/ [l] voiced frictionless clear palatal lateral

[lèdzì]	/lèdzì/	'day'
[ɛ̀kalala]	/ɛ̀kalala/	'European'

/w/ [w] voiced bilabial semivowel

[wàdum]	/wàdum/	'man'
[àwɔ]	/àwɔ/	'you sg.'

/y/ [y] voiced palatal semivowel

[iyáa]	/iyáa/	'grandmother'
[yɔ̀ɔ]	/yɔ̀ɔ/	'weave!'

Vowels

/i/ [i] voiced closed unrounded front vocoid

[ɩ] voiced half closed unrounded front vowels

[i] and [ɩ] fluctuate in closed syllables and word medially before a syllable beginning with [l] or a nasal, but not in other positions:

[àmin]	~[àmɩn]	/àmin/	'I'
[lèbilà]	~[lèbɩlà]	/lèbilà/	'bundle'

but:

[ǹ̩tibbɔ́]	/ǹtibbɔ́/	'branch'
[ibàm]	/ibàm/	'Itigidi'
[gèti]	/gèti/	'tree'

/u/ [u] voiced close rounded back vocoid

[ʊ] voiced half close rounded back vocoid

[u] and [ʊ] fluctuate in closed syllables and word medially before a syllable beginning with [l] or a nasal, but not in other positions.

[wàdum] ~ [wàdʊm]	/wàdum/	'man'
[gekúli] ~ [gekʊ́li]	/gekúli/	'many'

but:

[gitù]	/gitù/	'lizard'
[èbúkpɔ̀]	/èbúkpɔ̀/	'board'

/e/ [e] voiced unrounded half close front vocoid

[m̩̀bèke]	/m̀bèke/	'paw paw'
[ebo]	/ebo/	'lizard'

/o/ [o] voiced rounded half close back vocoid

[ìsokolo]	/ìsokolo/	'orange'
[dzo]	/dzo/	'keep!'

/ɛ/ [ɛ] voiced unrounded half open front vocoid

[ɛ̀pɛ]	/ɛ̀pɛ/	'moon'
[vɛɛmɛ]	/vɛɛmɛ/	'go away!'

/ɔ/ [ɔ] voiced rounded half open back vocoid

[gɛ̀tɔ́ɔ́]	/gɛ̀tɔ́ɔ́/	'work'
[ɛ̀nɔ̀n]	/ɛ̀nɔ̀n/	'person'

/a/ [a] voiced unrounded open central vocoid

[gɛ̀páŋà]	/gɛ̀páŋà/	'part'
[àyɛ]	/àyɛ/	'he, she, it'

In addition to these descriptions of the vowel phonemes and their members the following remarks about the scatter in the area of articulation, illustrated by the phonetic work chart, may be useful:

The half close vocoids [e] and [o] tend more towards their close corresponding neighbors. [o] has also a tendency to be very slightly centralized. Also the half open vocoids [ɛ] and [ɔ] tend towards their half close neighbors. The central vocoid [a] generally tends to be fairly far forward.

IX. Distribution of Phonemes

The distribution of the phonemes in Agbo will be described in terms of the syllable. The phoneme distribution within the syllable itself will be dealt with first, then across syllable boundaries. Finally, the distribution of the syllable within the word will be dealt with.

Distribution of Phonemes within the Syllable

The syllable patterns of Agbo are: V CV N

VC CVC

V

Any vowel may occur alone as a syllable. Front vowels are more frequent in occurrence than back vowels. Examples are given below.

ì̲nɔ̀ɔ̀n	'hen'	ákpái̲kon	'shoe'	ekpéi̲	'dove'
ɛ̲̀gà	'fish trap'	ipɛ́ɛ̲nàn	'vessel for oil and pepper'	gɛ̀ɛ̲̀	'a belch'
e̲sì	'bag'			gèzèè̲	'thorn'
á̲kpan	'plate'	gɛ̀naâ̲naá	'sediment of oil'	ɛpia̲	'market'
		iboó̲kolò	'dormouse'	èyòò̲	'civet'
		itúu̲tu	'baby'	esùu̲	'he has filled'
		ɛtɔɔ̲gi	'he threw'	tɔɔ̲	'throw!'

VC

The vowel of this syllable may be e ɛ a o, and the consonant l n ŋ. Examples of VC syllables:

étyèe̲l̲	'he will resemble'
lɛ̀nɛnɛ̀ɛ̲́l̲	'type of caterpillar'
ɛ̀vaa̲l̲	'chief'
ɛpíɔ̲́ŋ̲	'hornbill'
gepíô̲n̲	'forenoon'

CV and CVC Syllables

All consonants occur in initial position in the syllable. Final consonants are restricted to nasal and lateral continuants. There is no restriction on the occurrence of vowels. All occur. CV combinations are complete with the exception of combinations with labialized and palatalized consonants plus dz. These are the phonemes least frequently found in the language which no doubt accounts for the gaps. Combinations of vowels with these phonemes are illustrated in the chart below:

	i	e	ɛ	a	ɔ	o	u
ty	+	+	+	+	+		
dy	+	+		+		+	
dz	+	+	+	+	+	+	
ñ	+	+		+	+	+	+
ŋw			+	+			+
kw		+	+	+	+	+	+
gw		+		+	+		+

Examples of CV Syllables

bɛ̀ɛ́gɛ	'children'	mɔ̀ɔ̀ŋɔ	'answer!'
dɛɛ	'buy'	nàna	'run away!'
dyàákpu	'cassava'	ñañaŋili	'fowl with rough feathers'
dzè	'alligator'	esuŋa	'he filled'
fa	'rub!'	ɛŋwá	'flood'
ɛgɔ̀	'cloth'	ɛ̀pɛ	'moon'
ɛ̀gbà	'abcess'	esúi	'he stole'
gwànɔ	'woman'	àtù	'wine'
kele	'choose!'	tyeeŋ	'groan!'
kpɛ	'sell!'	ɛ̀vàzi	'hoop f. climbing palms'
kwe	'shout!'	wàdum	'man'
lèbèl	'beard'	iyáa	'old woman'
		ìbòzu	'calabash'

Examples of CVC Syllables

num	'take!'	dɛ̀n	'eye'	ǹñɔ́ŋ	'jigger'	lɛ́kàl	'fishtrap'

The Syllable N

N is a syllabic nasal m n ŋ as illustrated in the following words.

m̀bù	'coco yam'
ndɛgbà	'road junction'
ŋgwati	'fence'

Consonant and Vowel Distribution across Syllable Borders

Consonant clusters may occur across syllable borders, and consist of syllabic nasals, homorganic with the consonant they precede. This may be within the morpheme.

E.g. m̀bɔ́ŋ	'mosquito'	ǹtɔ̀tɔ́ŋ	'ashes'	ŋ̀kali	'trick'

or across morpheme borders as in the verb where the first person singular is indicated by a syllabic nasal.

E.g. mbaagi	'I tied'	ndaka	'I dreamt'	ŋkele	'I chose'

Vowel clusters occur across syllable borders both within the morpheme and across morpheme borders. They may be of the following combinations.

1. Each vowel followed by i
2. Each vowel followed by a reduplication of itself.
3. i followed by a ɔ o
4. o or u followed by a

2nd. member

		i	e	ɛ	a	ɔ	o	u
	i	+			+	+	+	
	e	+	+					
1st. member	ɛ	+		+				
	a	+			+			
	ɔ	+				+		
	o	+					+	
	u	+			+			+

In the following examples of vowel clusters '-' indicates a morpheme break.

àvíiyà	'brains'	e-sí-i	'he is making'
lɛ̀vià	'driver ant'		
ɛpíɔ́ŋ	'hornbill'		
gepión	'forenoon'		
ekpéi	'dove'		
gèzèè	'thorn'		
livɛìl	'wing'		
gɛzɛ́ɛ	'journey'		
ákpáikon	'shoe'		
ɛ̀vaal	'chief'		

Distribution of Syllables within the Word

When the V syllable is a back vowel it never occurs word initially. V only occurs word initially if it is a front or central vowel. The VC syllable always occurs finally in a word. CVC syllables occur alone or finally in a word. N may be an initial or medial syllable in a word. The maximum number of syllables per word is six, of which no more than four may be CV syllables.

Vowel Harmony

Syllables are restricted in their distribution in the word to accord with a limited system of vowel harmony.

If the vowel of the first syllable is a low front vowel, the vowel of the second syllable is also low.

There is no vowel harmony after high or central vowels.

If the vowel of the first syllable is a front mid vowel, the vowel of the second syllable is high or mid

This harmony is restricted to the first two syllables of a word except in the verb where three harmonizing V syllables may precede the verb root.

In the verb root only, the vowel of an initial CV syllable may be a back vowel. The vowel of the second syllable may then be:

1. i
2. a repetition of the first vowel when this is ɔ or o
3. when the vowel of the first syllable is u, the vowel of the second may be a

		2nd. syllable						
		i	e	ε	a	ɔ	o	u
1st. syllable	i	+	+	+	+	+	+	+
	e	+	+				+	+
	ε			+	+	+		
	a	+	+	+	+	+	+	+
	ɔ	+				+		
	o	+					o	
	u	+			+			

The Noun

The syllable pattern of the noun is

1. $+ (\mathrm{N/V/CV}) + \mathrm{CV}^{1-4} \pm \mathrm{VC} \pm \mathrm{V}^{1-2}$
2. $+ \mathrm{CVC}$
3. $+ \mathrm{CV}$

The minimum forms are CV dzè 'alligator'
CVC dɛ̀n 'eye'

The maximum form is CV.CV.V.CV.V: gɛnàanà 'sediment of oil'

Out of 750 nouns the first syllable of 380 begins with a consonant, of these:

145 have an initial g
132 " " " 1
85 " " " N

Of the 370 beginning with a vowel

86 have initial i
110 have initial e
137 " " ɛ
37 " " a

All nouns with an initial l also have a final l. Many nouns beginning with ge- or gɛ- have alternate forms beginning with e- or ɛ-.

Some of the nouns with an initial N have an alternate form with an initial e- or ɛ-.

This would seem to give validity to the hypothesis that there was a noun class system in Agbo. A further pointer in this direction seems to be that certain nouns, especially names for relatives, change the e- or ɛ- to a in the plural, while most of the nouns do not have a sg. vs. pl. distinction. The related language, MBEMBE, retained a noun class system.

The Verb

The syllable pattern of the verb is:

$$\underset{\text{Prefix}}{\pm [\pm \mathrm{CV.CV} \mp (\pm \mathrm{CV} \pm \mathrm{N/V}^{1-2})]} + \underset{\text{Root}}{\underset{\mathrm{CVC}}{\underline{\mathrm{CV} \pm [\pm(\mathrm{V} \pm \mathrm{CV}) \mp \mathrm{VC}]}}}$$

The minimum form is CV or CVC and occurs in the imperative:

gwa 'drink!' num 'take!'

The maximum form is CV.V.V.CV.V.CV: geèékoògò 'he will not show'

The initial C of a verb root is never /ŋ/.

In the CV.CV verb roots the C of the second syllable must be one of the following:

b g k m n ŋ l

Examples:			
wuki	'follow!'	gabi	'entwine!'
baga	'tie!'	dumi	'sew!'
fɛ̀nɛ	'shave!'	dzàŋa	'quarrel!'
gali	'lift!'		

Particles

Under this everything that is not noun or verb is collected. The syllable pattern of the particle is:

$$\pm N^{1-2}/V^{1-2} \quad + \frac{CV^{1-3} \quad + \quad V \quad + \quad CVC}{CVC}$$

The minimum form is CVC diŋ 'hard'

The maximum form is N.N.CV.CV mm̀manà 'here'

X. Suprasegmental Features

Tone

Legbó has three tonemes as can be shown for nouns as follows:

Comparison 1					Comparison 2	Comparison 3			Results
Preceding Frames: A	B	C	Substitution List			Following Frames: A	B	C	
s	h	h	1 akpaŋ	'plate'	l	l	s	h	H M
s	h	h	2 waka	'brother'	l	l	l	s	H L
l	s	h	3 ekpon	'hill'	h	s	h	h	M H
l	s	h	4 kpakpa	'gr.nut'	s	l	s	h	M M
l	s	h	5 ɛgɔ	'cloth'	l	l	l	s	M L
l	l	s	6 lɛta	'stone'	h	s	h	h	L H
l	l	s	7 wadum	'man'	h	l	s	h	L M
l	l	s	8 ɛtɛn	'animal'	s	l	l	s	L L

The frames are:

Preceding:				Following:			
A	ǹdá	'where is?'	= H	A	sɛ́	'the'	= H
B	àyɛ ezee	'he saw'	= M	B	aamán	'our'	= M
C	àyɛ ézèè	'he will see'	= L	C	wɔ̀ni	'one'	= L

Comparisons: h = higher s = the same l = lower

1. substitution item in relation to preceding frame.
2. second syllable of substitution item in relation to first syllable
3. second syllable of the substitution item in relation to following frame.

There are so far no disyllabic nouns of the tone pattern H H, although the tone sequence H H does occur in nouns of more than two syllables. A strong preference for the lower tones is evident in the language and can be shown in the following statistical table on disyllabic nouns:

Total sample of disyllabic nouns 283:

H H:	0	M H:	16	L H:	33
H M:	4	M M:	27	L M:	68
H L:	12	M L:	26	L L:	97
	16		69		198

No perturbation has been observed, however tone changes are widely used to mark grammatical distinctions like tense/aspect in the verb on the word level, relationships between nouns on the phrase level, and certain dependent clauses on the clause level.

Stress

Stress is not phonemic. Two factors control the distribution of stress within the word:

(1) Tone: the stress [illegible] by the syllable with the highest tone.

(2) Linear position in the word: out of several syllables with the same height of tone the one nearest to the end of the word bears the stress.

Feature of the Word: Tenseness

Phonetically the feature is manifested by a combination of fortis and lengthened pronunciation of the consonant on which it focuses. The following vowel is appreciably shortened to compensate for the length of the consonant. A long vowel is reduced to normal length. It can be said that the fortis consonant has a certain ambivalence since the vowel preceding it is also shortened.

There is a phonemic contrast between presence and absence of the feature in corresponding words:

(The consonants on which the tenseness focuses are written double, of digraphs only the first member is doubled.)

1.	p	eppói	'he is belching'	epó	'he belched'
2.	t	ettíŋi	'he is laying'	etíŋi	'he laid'
3.	kp	ekkpei	'he is learning'	ekpei	'he learned'
4.	k	ekkumi	'he is sewing'	ekumi	'he sewed'
5.	b	bba	'block!'	ba	'ask!'
6.	d	eddui	'he is beating'	edui	'he beat'
7.	gb	ɛggbɔi	'he is jumping'	ɛgbɔ	'he jumped'
8.	g	eggéi	'he is listening'	egé	'he listened'
9.	kw	ɛkkwali	'he is trying'	ɛkwaali	'he tried'
10.	gw	ɛggwai	'he is drinking'	ɛgwa	'he drank'
11.	ty	ettyeŋi	'he is groaning'	etyeeŋi	'he groaned'
12.	dy	--------			
13.	f	ɛffai	'he is rubbing'	ɛfa	'he rubbed'
14.	v	vvei	'pour out!'	vei	'boil!' int.
15.	s	essíi	'he is doing'	esí	'he did'
16.	z	------			
17.	dz	eddzii	'he is eating'	edzi	'he ate'
18.	m	ɛkkámmi	'he is big'	ɛkkámi	'he was big'
19.	n	ennúmi	'he is taking'	enúmi	'he took'
20.	ñ	eññói	'he is looking after'	eñó	'he looked after'
21.	ŋ	ɛsɛŋŋi	'he is going'	ɛsɛŋi	'he went'
22.	ŋw	ɛŋŋwái	'he is going to bed'	ɛŋwá	'he went to bed'
23.	l	ellúi	'he is making dirty'	elúi	'he made dirty'
24.	w	ewwui	'he is grating'	ewui	'he grated'
25.	y	ɛyyali	'he is paddling'	ɛyaali	'he paddled'

Out of these examples the Nos. 2-6, 14, 18, 19, 21, 23, 24 are minimal pairs, the others represent contrast in analogous environments. At present there are no examples for z and dy. The reason for the missing /zz/ is that as a rule a /z/ which becomes fortis also becomes voiceless. The /dy/ is a rare phoneme and so far it is not found at the beginning of a monosyllabic verb root.

Distribution of this feature:

It occurs focussed on the last syllable's initial consonant of the verb root. If the verb root takes a CV suffix, it focusses on the suffix:

Pattern	Root	Suffix	Pres. Continuous	Meaning
CV	ba	-mi	ɛbammi	'ask'
CV.V	du	-i	eddui	'beat'
CV.V	kòo	-i	ekkói	'grind'
	dua	-bi	edubbi	'hide'
CVC	kum	-i	ekkumi	'sɛw'
CV.VC	taaŋ	-i	ɛttaŋi	'sweep'
CV.CV	nomo	-i	enommi	'stretch'

It seems preferable to set this up as a prosodic feature rather than analysing it in terms of a series of fortis consonants; firstly because it seems to be closer to the phonetic facts, secondly because it allows a more concise description, and thirdly because its principal use in the language is to denote one particular tense/aspect of the verb, viz the present continuous. There are a few occurrences in the basic verb root (see Nos. 5, 14, 18) and much fewer nouns.

gittù	'life'	ebbí	'goat'
èbbè	'steam'	ɛ̀bbɔ́	'branch'
isúddu	'wine jug'	etc.	

It would be possible to analyse tenseness as a feature of the syllable rather than of the word. However certain details point the other way:

(1) the focussing on a part of a word as defined above,

(2) the partial carrying over of the tenseness to the preceding syllable (This is specially noticeable, when in a verb form the consonant of the preceding syllable is originally a voiced fricative, because this then turns mostly into the corresponding voiceless fricative.),

zoo	'find!'	esokki	'he is finding'

XI. Unsolved Problems

Elision

Elision can take place across a whole phonological utterance or only between parts of it, depending on the rapidity of speech. This means that it takes place between various word classes. The elision rules for all these combinations have not been fully investigated. However some work has been done on the most frequent combination of verb followed by noun with the following result:

Verb + Noun

(Nouns can begin only with a front or central vowel)

The verbs of the pattern CV elide differently from those of the pattern CVCV.

CVCV Verbs

These elide quite regularly: the final vowel of the verb assimilates completely to the vowel of the noun.

CV Verbs

Verb final front or central vowels assimilate completely to the following vowel.

Final back vowels remain unchanged except in the following cases:

ɔ + i = uu
ɔ + e = oo
ɔ + ɛ = ɔɔ
o + i = uu
u + i = uu

Tone

It seems very difficult to determine what happens to the tone on the interacting vowels as there seems to be much fluctuation according to speed of speech. We are not certain that one of the two tones ever disappears, if so this happens only at extreme rapidity, in which case the lower of the tones disappears.

Consonants

The final consonants l m n ŋ are dropped when the following word begins with a consonant. However here too the details have still to be investigated, as there are instances, when the final nasal is not dropped:

	ɛ̀bɛ́ɛ́ŋ	'grasscutter'	ɛ̀bɛ́ɛ́ŋ sɛ́	'the grasscutter'
vs.	ànààn	'oil'	ànàà sɛ́	'the oil'

The conditioning factor may be the vowel, the consonant, or the tone.

XII. Orthography

The following orthographical symbols have been proposed:

Consonants

Phoneme	Orthogr. Symbol
p	p
t	t
kp	kp
k	k
b	b
d	d
gb	gb
g	g
ty	c
dy	j
kw	kw
gw	gw
f	f
v	v
dz	dz
s	s
z	z
m	m
n	n
ñ	ny
ŋ	(n word initially before k, g, kw, kp, gb, nw) (ng word initially before gw and w, word medially and word finally).

Phoneme	Orthogr. Symbol
ŋ^w	nw
l	l
w	w
y	y

Vowels

i	i
u	u
e	e
o	o
ɛ	er
ɔ	or
a	a

Vowel Clusters

Vowel clusters which involve the half open vowels er and or are written with the "silent letter" r at the end of the cluster to avoid the appearance of the r between vowels, where readers who are familiar with English may pronounce it instead of recognizing it as a "silent letter" the function of which is to mark the half-openess of the vowel:

/livɛi/ liveir 'wing'

Fortisness

This is written by reduplicating the consonant on which it focuses. In case of a digraph only the first member is reduplicated.

Tone

It will certainly be a help for reading if tone is marked in the orthography. The suggested symbols are:

´ over the V or N for high tone
` over the V or N for low tone
no mark for mid tone.

XIII. Text

The following few lines of text are meant as a sample of the language written in the proposed orthography. The first line is a phonemic transcription, the second is in the orthography, and the third is a word by word translation. / means short pause, // means a more definite pause with difinite drop of voice before and definite rise of voice after it.

lèdzìl	wɔ̀ni	wàdum	wɔ̀ni	ekú	/	aàma	ɛɛ̀vɔ̀ɔ̀ni	bɛ̀ɛ́gɛ́
Lèdzìl	wòrni	wàdum	wòrni	ekú,		aàma	eèrvòòrni	bèérgér
day	one	man	one	he-was,		who	he-begot	children

àfɔŋ	//	ɛ̀tɛ́ɛ	ede	ɛ̀nɔ̀n	ɛɛ̀tɔ	gèsuù	/	ɛ̀nɛnì	vɔ́m	/
àforng.		Èrtéer	ede	èrnòrn	eèrtor	gèsuù,		èrnernì	vórm,	
two.		His-father	was	person	who-had	riches,		he-owned	something,	

ìntɛ̀gíǹtɛ̀	/	èbbi	/	lídzil	/	bi	gìnɛnɛni	ìsagìsa	//
ìntèrgíǹtèr,		èbbi,		lídzil,		bi	gìnernerni	ìsagìsa.	
animal,		goat,		food,		and	possessions	several.	

lèdzìl	wɔ̀ni	àwàáyɛ	/	aàna	eède	wààgɛ́	/	etóliyɛ	ŋ́kɛ	/
Lèdzìl	wòrni	àwàáyer,		aàna	eède	wààgér,		etóliyer	ńker,	
Day	one	child-his,		who	was the youngest,			he went to him,		

èdìyɛ	àbɛɛ	/	tɛtɛ	tyèe	gìnɛnɛni	sɔ́	gɛ̀tɔ̀gɔ̀	àfɔŋ	/
èdìyer	àbeer,		terter	cèe	gìnernerni	sór	gèrtòrgòr	àforng,	
he-said	quote:		My father	divide	possessions	your	parts	two,	

num ǹtyèègi lɔ́min / nim / ede aàma ákú gittù /
num ǹcèègi lɔ́rmin, nim, ede aàma ákú gittù,
take portion my, give-me while you-are life,

ebi ńnà geède / ede ábbo / bákàsɔ́ bɛ mí gaàátɛ ...
ebi ńnà geède, ede ábbo, bákàsór ber mí gaàáter....
if so not-it-is , when you-will-die, brothers-your they me
not-will-allow...

XIV. Word Lists and Comparative Notes

Phones peculiar to some of the dialects

There are three phones which are peculiar to the Ekureku and Imabana dialects: [ƀ] [h] [hw] for examples see word lists below

Evidence for uniting phones (Imabana dialect)

[h] [hw] = /h/
[hw] occurs only before [u] see 41, 64, 80, 91, 152
[h] elsewhere

Evidence for separating phones (Imabana dialect)

[h] is suspicious with [w] and [y]

[h] [w] = /h/ /w/

[wa]	'cook!'	[ha]	'wash!'

[h] [y] = /h/ /y/

[ahɛ]	'you walked'	[àyɛ]	'he'
[aha]	'you wash'	[ayá]	'that'

[ƀ] is suspicious with [b] [v] [w]

[ƀ] [b] = /ƀ/ /b/

[aƀɛ]	'you killed'	[àbɛ]	'they'

[ƀ] [v] = /ƀ/ /v/

[ɛƀà]	'cow'	[ɛvà]	'dog'

[ƀ] [w] = /ƀ/ /w/

[ƀe]	'sing!'	[we]	'swim!'

The following comparative lists must be considered with a certain amount of caution since they are very early notations which could not be sufficiently checked, especially for tone:

Examples of [ƀ] in Ekureku and Imabana with corresponding words in Adadama and Iṭigidi:

No.	Engl.	Ekureku	Imabana	Adadama	Itigidi
26	root	ketíƀɛ̀	getíƀɛ̀	gètizàì	gètivɛ̀
62	kill!	ƀɛ	ƀɛ	vɛ	vɛ
83	roast!	ƀà	ƀamilì	vàmi	?
117	wind	kɛƀɛ́ƀɛ̀	kɛƀɛ́ƀɛ̀	gɛ̀vɛvɛ́ɛ	gɛvɛ́vɛ̀
127	leg	kɛƀɛ́	kɛƀɛ́	gɛ̀vɛ̀	gɛ̀vɛ
138	grass	libíyɛlɛ̀	lìƀìyɛlɛ̀	lìvɛ́vɛlɛ̀	lìvìyɛ́lɛ̀
153	cut!	?	ƀilì	vìli	vilì
156	far	?	ɛƀálà	evíla	gevílà
186	sing!	biyè	ƀe	live	viyè
	thief	?	eƀèƀè	èvèvè	?
	fresh	?	ɛ̀ƀaƀá	nváavába	?
	cow	?	ɛ̀ƀà	ɛ̀vààm	?
120	lake	kɛ́bakilì	keƀe	gèvè	lɛ̀fɔ̀mɛ

Examples of [h] and [hw]

9	all	kɛ́hɔ̀lɔ̀	kɛ́hɔlɔ	èbíni èbíni	ebúni ebúni
20	bird	iho	iyò	lìzol	ìzol
30	blood	ahí	ahí	àzì	àzi
33a	eggs	ŋhɛ́ŋilì	ŋhɔ́ŋili	ɲzíŋìlì	ɲzíŋịnì
34	horn	lɛ̀hɔ	lɛ̀hɔ	lèvù	lìvù
41	nose	ŋ̀hwu	ŋ̀hwu	ɲ̀zúŋ	ɲ̀zúŋ
49	belly	kɛhɔ̀	kɛhɔ̀	lìvɔ̀	ìvɔ̀
57	see!	he	he	zee	ze
64	fly	hwuŋà	hwuŋà	wɔ̀ŋɔ	wuŋà
65	walk	hɛ	hɛ	zɛɛ	zɛ
78	soil	lɛhɛ̀	lɛhɛ̀	lɛ̀zɛ̀	lɛ̀zɛ̀

XV. Conclusion

More investigation needs to be done on the higher level phonological phenomena, which will no doubt shed light on the grammatical structure of the language.

FOOTNOTE

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Appendix X

Some Articles in Preparation

Brend, Ruth M. 'Acoustical Support for West African Field Work.'

Callow, John C. 'Patterns of Neutralization Across Levels in Kasem Narrative.'

Callow, Kathleen. 'Comparative Notes on Serial Constructions in Three Ghanaian Languages.'

Jacobs, Jill and Pike, Kenneth L. 'Matrix Permutation as a Heuristic Device in the Analysis of the Bimoba Verb.'

Meier, Inge and Bendor-Samuel, John T. 'Some Contrastive Features of the Izi Verbal System.'

Meier, Paul. 'Izi Tone and Grammar.'

Pike, Kenneth L. 'Suprasegmentals in Reference to Phones of Item, of Process, and of Relation.'

Pike, Kenneth L. 'Grammar as Wave.'

Soutar, Jean and Pike, Kenneth L. 'Matrix Patterns in the Use of Direct and Indirect Quotations.'

Spreda, Klaus and Bendor-Samuel, John T. 'Fortis Consonants in Agbo.'

Stahlke, Herbert and Brend, Ruth. 'Use of Index Matrices in the Preparation of Language Textbooks.'